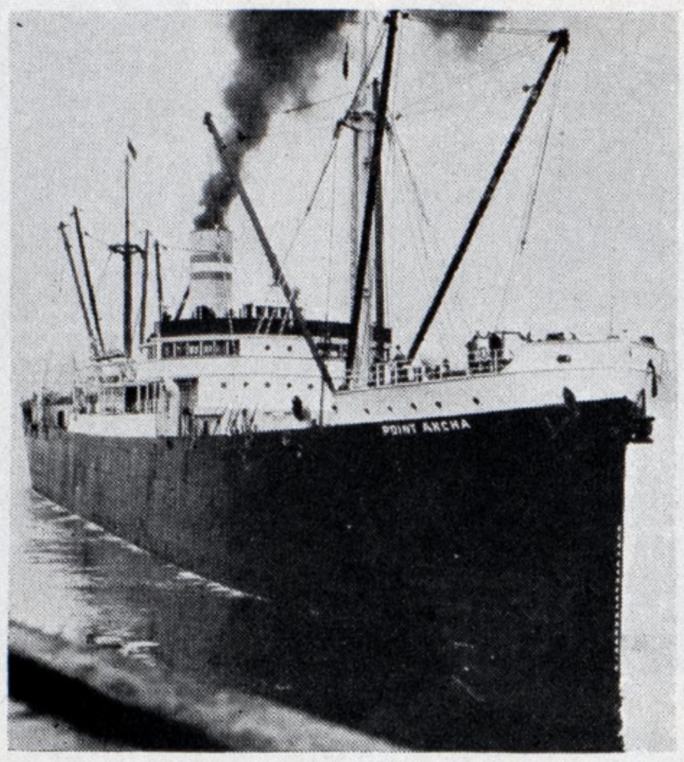
Marine Review

SHIP OPERATION SHIPBUILDING CARGO HANDLING

The National Publication Covering the Business of Transportation by Water

CLEVELAND **FOUNDED 1878** **NEW YORK**



Cleveland Office, Penton Bldg.
A. H. JANSSON, Editor
F. V. COLE, Business Manager

New York Office, 220 Broadway
R. D. MacMILLEN, Eastern Manager
E. C. KREUTZBERG
B. K. PRICE

Chicago Office, 1118 Peoples Gas Bldg.
L. C. PELOTT
W. G. GUDE

Pittsburgh Office, 507-8 Oliver Bldg.
S. H. JASPER
E. A. FRANCE JR.

Washington, D. C. Office,
1050 National Press Building
L. M. LAMM

London Office, Caxton House
Westminster, S. W. 1
VINCENT DELPORT

Published monthly by
The Penton Publishing Co.
Cleveland, Ohio, U. S. A.

CONTENTS

Vol. 64 **October, 1934** *No. 10*

	Page
Editorial	11
Merchant Ships and the Navy — By Commander A. B. Court	12
Rainbow Meets Endeavour for America Cup — By Wm. Bennett	16
Gdynia, Poland's Gateway to the Sea — By Joseph Ellner	18
Coast Guard Cutters, Onondaga, Algonquin — By A. H. Jansson	22
Maritime Law—Late Decisions — By Harry Bowne Skillman	26
Ports—Marine Business Statistics Condensed	27
New Construction, Ordered and Contemplated	28
Bunker Prices—Domestic and Foreign	29
Stevedoring and Dock Management Progress	30
Automobiles Transported by Lake Vessels — By H. E. Stocker	30
Useful Hints on Cargo Handling	33
Up and Down the Great Lakes	34
Personal Sketches of Marine Men — George A. Marr, Vice President, Lake Carriers — By Wm. M. Faber	37

MARINE REVIEW is published monthly on the first of each month by the Penton Publishing Co., Penton Building, Cleveland, O.; JOHN A. PENTON, Chairman of the Board; C. J. STARK, President; J. D. PEASE, Vice President; F. V. COLE, Secretary.

Member, Audit Bureau of Circulations, Associated Business Papers Inc., and National Publishers Association.

Subscription in the United States and its possessions and in Cuba and Mexico, $3 per year; single copies 35 cents, back numbers over three months 50 cents. Subscription in Canada $4 per year; in Great Britain and other foreign countries £1 per year. Cable addresses: Penton, Cleveland, and Irotrapen, London.

Entered in the post office at Cleveland, O., as second class matter under the act of March 3, 1879.

Copyright 1934 by the Penton Publishing Co., Cleveland, O.

NRA U.S. CODE GRAPHIC ARTS INDUSTRY REGISTRATION NO. A-3-34—01716 1934

Marine Review

FOUNDED 1878

SHIP OPERATION - SHIPBUILDING - CARGO HANDLING

Volume 64 **October, 1934** **Number 10**

Fireproof Construction for Ship Interiors

EVERY major disaster at sea has given a new impetus to the development of measures designed to render impossible the repetition of the particular failure involved. That fire could spread so quickly on a modern vessel such as the MORRO CASTLE, incorporating all of the latest and most efficient safeguards in prevention, detection and extinction of fire, was a shocking revelation.

Investigation of the disaster and the study and analysis of the findings will drive home a clear realization of the vulnerable parts in the system of protection against the possibility of such a catastrophe. Intensive efforts will be directed to the development of ways and means to eradicate these weaknesses.

Many factors enter into the equation of safety against the ravages of fire at sea. Under all circumstances the human element plays its part. Always for safety dependence must be placed to a very large extent on those who are responsible for the operation of the ship. It is necessary that they should be carefully trained in the duties called for in an emergency. The mechanical appliances for detection, control and extinction of fire must be dependable and efficient and must be maintained in good working order.

Insofar as any of these factors were responsible, the lesson again learned is that for safety the greatest care must be exercised in establishing the proper functioning of all mechanical appliances and that everything humanly possible be done to ensure orderly, disciplined and co-ordinated action of officers and crew in an emergency.

When, despite all of the above precautions, it is possible to conceive of a disastrous fire such as that experienced on the MORRO CASTLE, the problem becomes definitely one for the naval architect and shipbuilder. They will be called upon to develop designs and methods of construction using materials which would make the structure fireproof, or at the least, so highly resistant that no fire could gain dangerous headway.

In this connection perhaps one of the most important results of the disaster will be the breakdown of resistance to change in design and in the use of materials hallowed by time and tradition. No longer will it be taken for granted that the all-steel structures of passenger ships can only be finished in their interiors, to meet present day demands for luxury and comfort, by the use of wood and other similar materials. A way will be found to create suitable interiors which are in fact fire resisting.

Though resistance to change will not in the future be so stubborn, it must be remembered that this calls for a breaking with custom and habit which has persisted since the days when wood was the only material of which ships were built. On the other hand it must be borne in mind that much progress along this line has already been made.

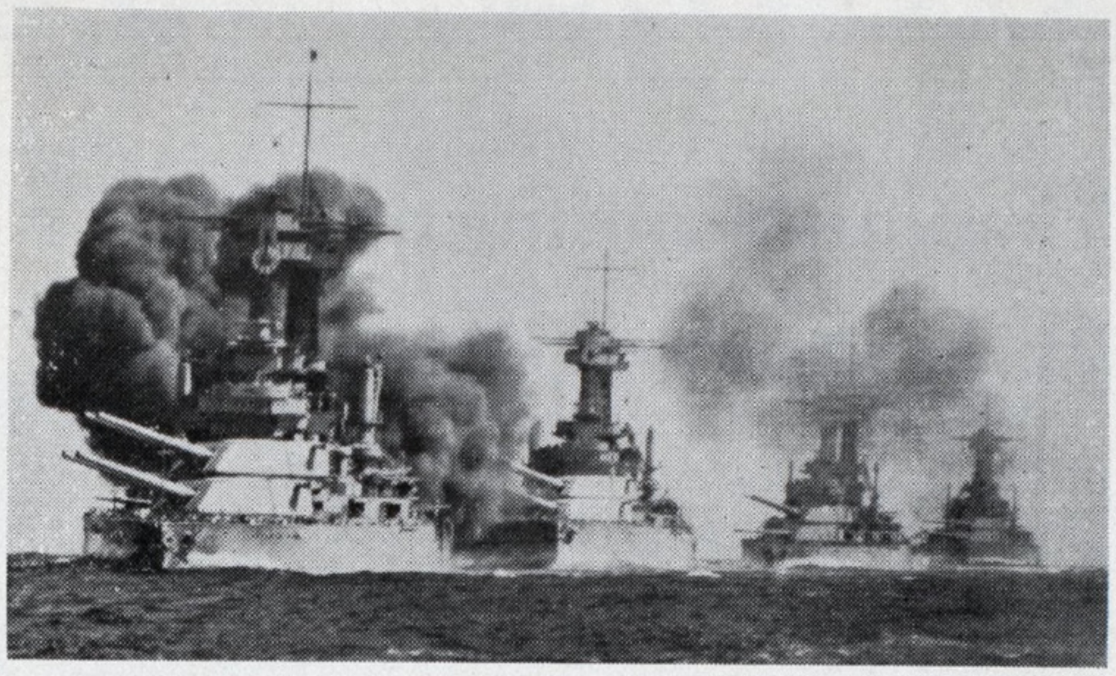
In the steel structure which framed all of the elaborate quarters on the MORRO CASTLE, by what stretch of the imagination and to what extent could the more or less inflammable material, considered necessary for comfort and beauty, be replaced by cold steel? The art of steel making, fabrication and finish has passed through a remarkable development in recent years, and the steel maker and artisan in steel are now prepared to meet the requirements of the artist and interior decorator.

It would be difficult to go so far as to suggest that a substitute should be found for the teak or pine decks. This would be the last and most humiliating departure from tradition, but who knows, perhaps the future will witness even this drastic transformation. We cannot help joining the universal protest against such a change.

MERCHANT SHIPS,

Needed For National Economy and Defense

BY COMMANDER A. B. COURT*



The great guns speak. A file of United States battleships in battle force practice, firing salvos from their main batteries

NO COMMUNITY bounded by three thousand miles of sea coast could possibly ignore the sea; for the sea, to every people that lives along its shores, is forever both a defense and a menace, a barrier and a highway, a confine and a lure.

With less logic than almost any modern nation could we of the United States deny the influence of the sea upon our national fortunes. Our forefathers came here across the sea; our whole history is full of its lore. Our water borne commerce—coastwise, intercoastal, and foreign—is probably not exceeded by that of any other country. The products of our mines, our oil wells, our farms, our mills, and our factories are carried across the sea to every quarter of the globe. The products and the art of all the world, brought to us by sea, find ready markets among us. Our culture mingles with that of Europe, Asia, and our neighbors in the Western hemisphere. Our possessions extend half-way around the world; our ships encircle it; our finance and our engineering enterprise are inextricably interwoven with that of every people on earth. For all the ensuing traffic the thoroughfare is the sea.

Security of Maritime Interests

Various elements are involved in the security of these farflung "maritime interests" of ours. The dependability of foreign source of raw materials, the assurance of foreign markets, the reliability of communications, the availability of bases for our operations abroad, the diligence of our agents, the skill of our diplomats, our teachers, our missionaries, and all the vast organization of our enterprise and finance in gaining and holding the good will and respect of foreign peoples—all these things enter into it. But in the last analysis the security and permanence of our "maritime interests" rest upon the foundation of ships—seagoing vessels that ply upon the oceans which cover three-fourths of the earth.

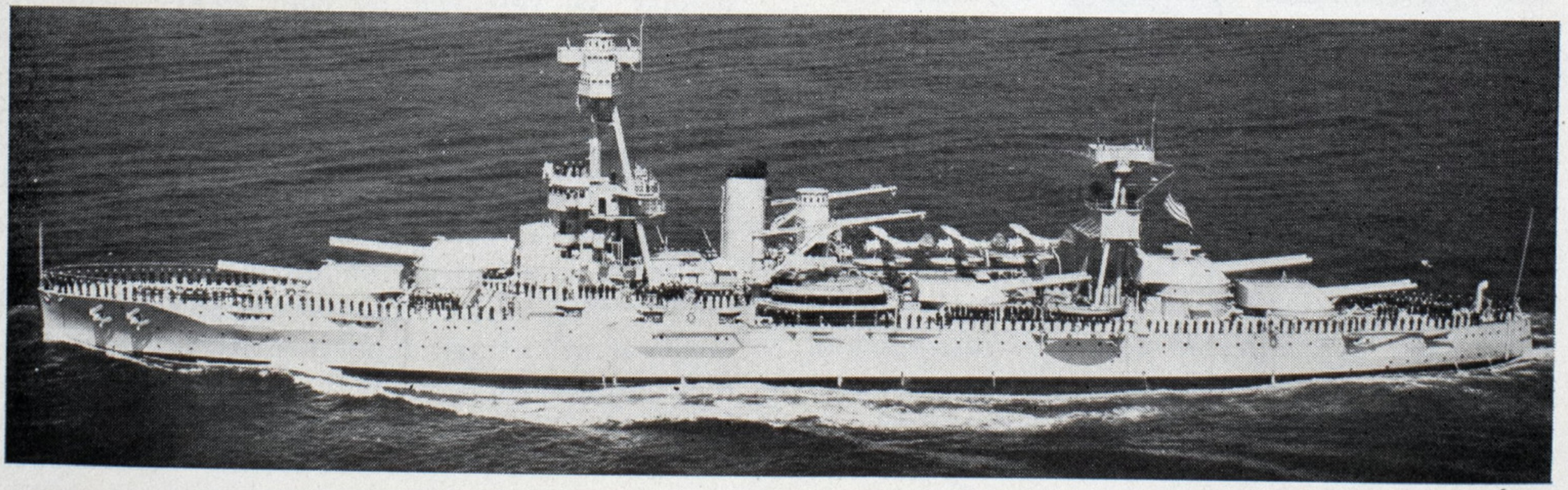
Sea going vessels under any national flag may therefore be regarded as evidence of the magnitude and vigor of the maritime interests of that nation. So it is with other nations, and so it is with our's. Our merchant marine represents this nation's interest in world enterprise and trade. Our navy represents the strength of this nation's purpose to defend its possessions, its interests, and the rights of its citizens wherever they happen to be. Together, the merchant marine and the navy show what place this nation believes itself entitled to occupy among the great sovereign powers of the earth.

Although these two manifestations of our national spirit are frequently thought of as having little in common, that conception is far from correct. They are, on the contrary, closely related, complementary, and interdependent. Neither is secure without the other, in peace or war. The navy, of course, is the professional defense of the "maritime interests" as well as of the territory of the nation. But the merchant marine also is a part of the national defense, in addition to its function in promoting the "proper growth of the foreign and domestic commerce of the United States."

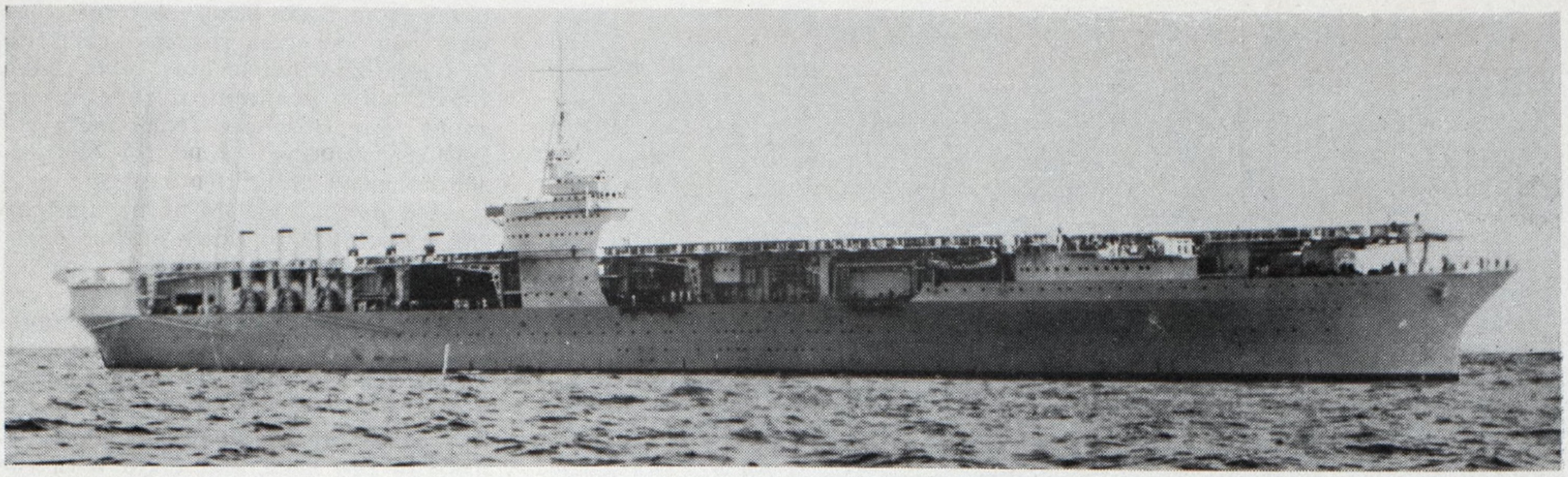
Dual Role of Merchant Marine

This dual role of the merchant marine arises from the theory, amply supported by facts observed in the past, that the defense of any national interest is a national concern, the

*The author, Commander A. B. Court (CC) U. S. N., is attached to the Office of Chief of Naval Operations, Navy Department, Washington, D. C.



U. S. S. New York, first class battleship. One of several modernized in Navy yards since the Washington treaty



Latest airplane carrier U. S. S. Ranger. Built by the Newport News Shipbuilding & Drydock Co. Recently completed

responsibility resting upon every part of the whole nation, those nearest the point of attack being expected to throw themselves instantly into the defense. As our own Admiral Mahan has pointed out, no maritime nation has ever been successful in a war in which it lost command of the sea. This historical fact is well known to all students of military and naval science; it is well known to those who might be our enemies. The first point at which we must expect attack therefore, if attack there is to be, is on our sea power, our shipping and our overseas communications. The merchant marine, being nearest to this point, except for the navy itself, carries jointly with the navy the responsibility of being in the first line of defense.

The same principle is repeatedly applied ashore. Citizens are sworn in as deputies to assist the police or the United States marshall to put down crime, or they are called out as state troops to suppress civil disorder. The whole civil population is drafted into national military service to assist the professional army in every major war. In thus accepting service in the common defense these citizens are primarily defending themselves, as the merchant marine does in assistng the navy.

To what extent the merchant marine may be called upon as an auxiliary to the navy in the national defense depends upon the character of the emergency, the plan of campaign, the theatre of hostile operations, and the capabilities or adequacy of each for its task. The call may be for ships or men, or both. If we were on the defensive in the Atlantic,

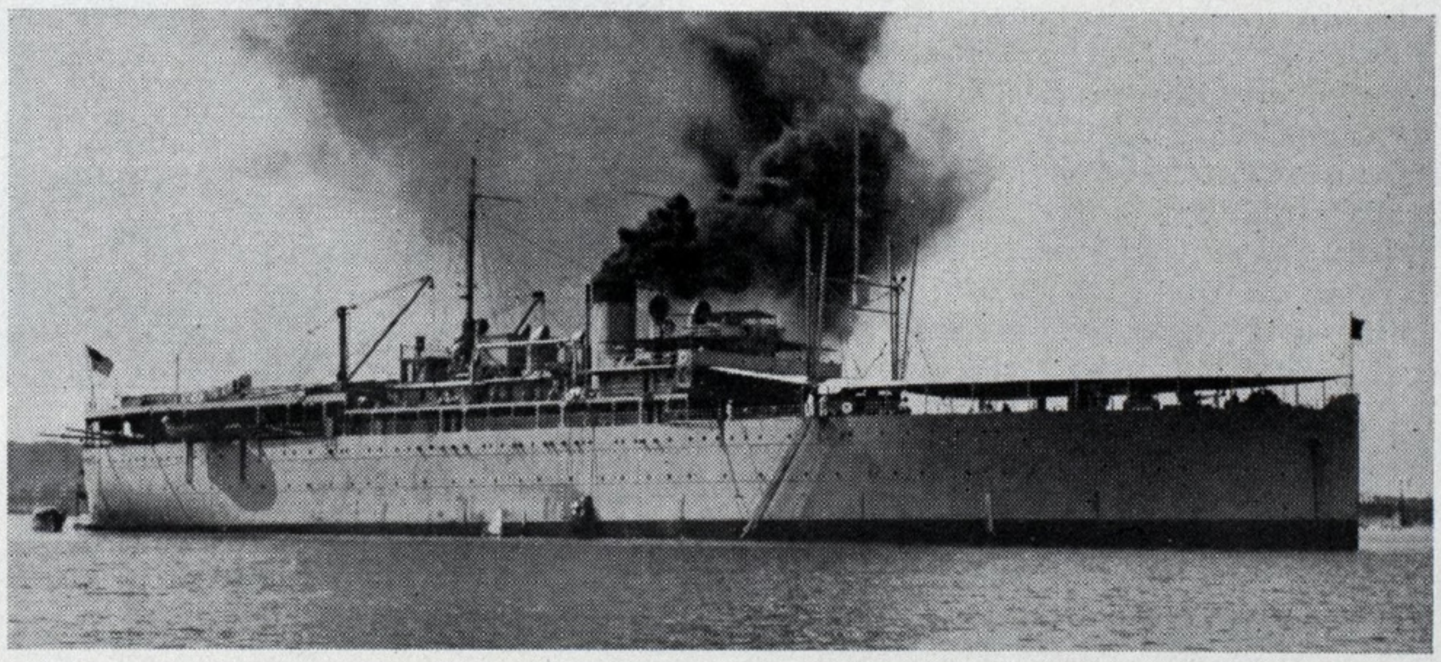
Hail to the Navy!

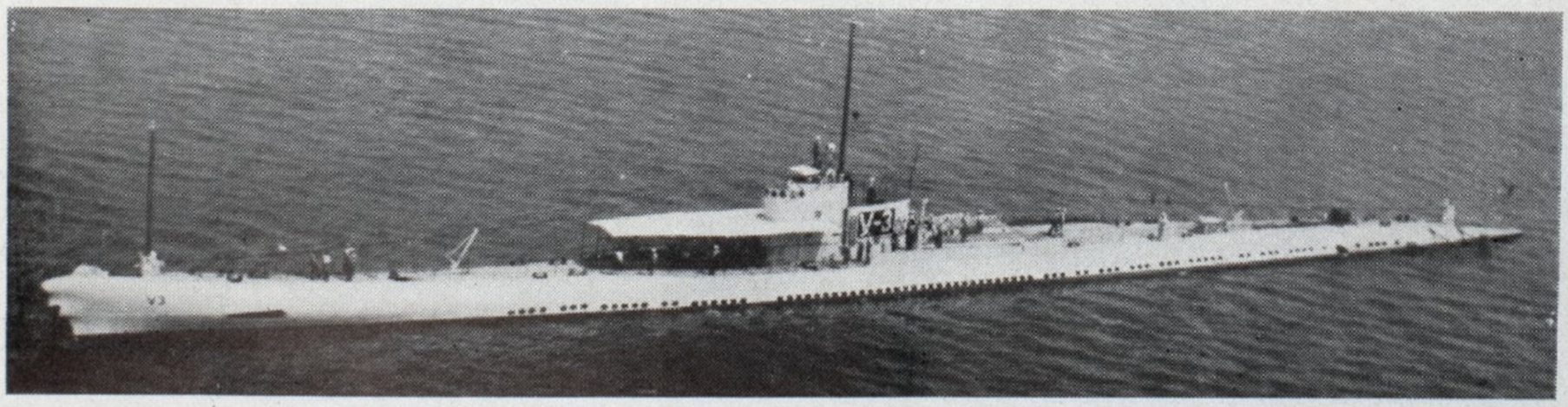
THE anniversary of the birth of Theodore Roosevelt, Oct. 27, will this year, as in former years, be observed afloat and ashore as Navy day. Admiral William H. Standley, U. S. N., chief of naval operations, in a letter addressed to the naval service has declared that the general theme for Navy day will be, "The treaty navy, fully manned, backed by an adequate merchant marine". That our national welfare is dependent on an adequate navy and merchant marine is clearly brought out in the accompanying article by Commander Court.

where bases are plentiful on our coast, comparatively little demand might be made upon the merchant marine; but if, on the other hand, we were compelled to defend our possessions in the Far East, thousands of miles away from any adequately fortified base, by far the greater part of all the tonnage of the merchant marine would have to be actually incorporated in the navy.

Use of Merchant Ships

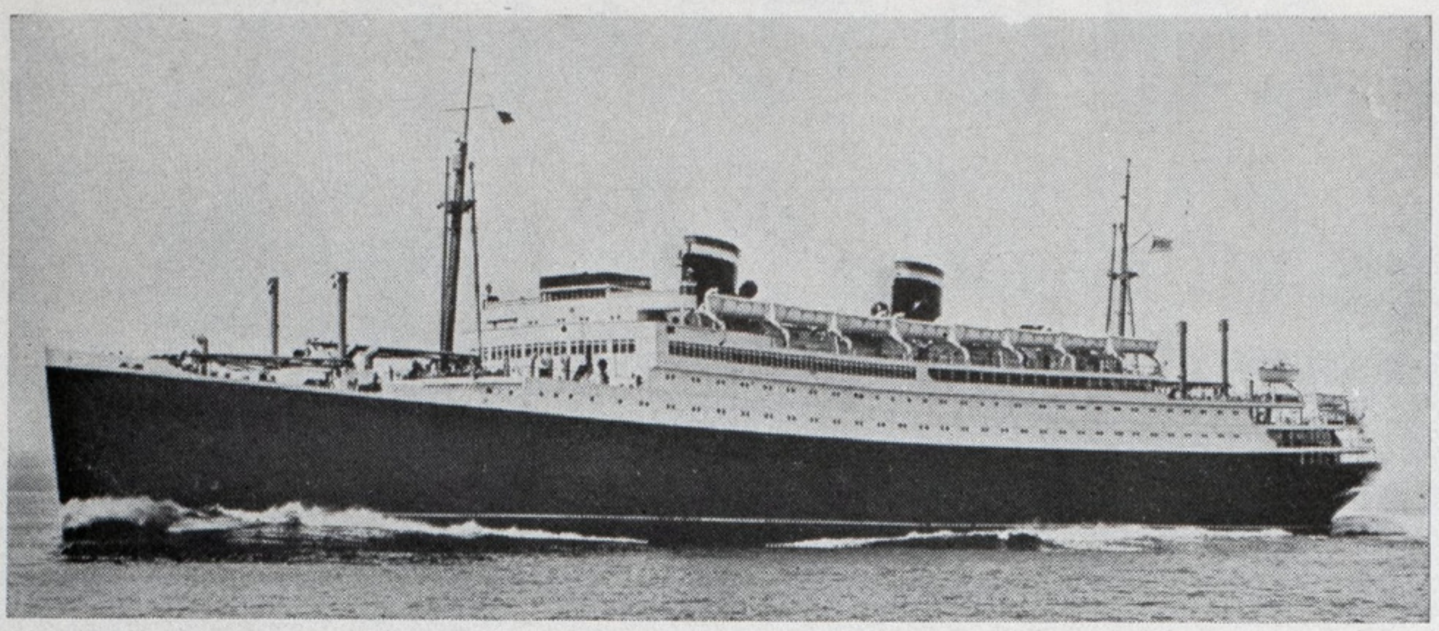
In general, the further distant the theatre of operations is from our continental naval bases, the vastly greater are our problems of maintenance and supply, in the solution of which the merchant marine must bear the major burden. The more aggressive our adversary is, the more effectively must we concentrate every available combatant vessel and aircraft to drive home our counter attack—which means that the merchant marine must be used to the fullest extent in order that every fighting ship may be al-





Above—The U. S. S. Wright, tender for aircraft of flying boat type

At Left—One of the latest submarines, U. S. S. Bonita. Built by the Portsmouth navy yard



S. S. Washington—24,289 gross tons—Speed, 20 knots—Completed May 2, 1933—Sistership, one—Transatlantic service, United States lines

ways at the point where it was needed for fighting.

To say that every fighting ship must be always at the point where it is needed for fighting brings up two interesting effects of the treaties of naval limitation. These treaties place restrictions only on surface and submarine vessels designed especially for fighting, and are mainly quantitative, dealing as they do with displacements, and the number and calibre of guns. Consequently, an intensive qualitative development has taken place in naval design, which accentuates the difference between merchant ships and ships built especially for fighting.

Effect of Treaty Restrictions

Due to this modern trend in design, it is no longer possible, as it once was, to make a fairly satisfactory general purpose cruiser, for example, out of a fast passenger ship by the simple expedient of mounting a few guns on her decks. Such a makeshift man-of-war might be valuable for some detached duties to which fighting cruisers would otherwise have to be assigned, but it would be almost valueless in a fleet action; the humblest "fighter" could quickly destroy it.

But these very treaty restrictions have enhanced the naval-auxiliary value of the merchant marine in several indirect ways. Because the treaties permit the existance of only a few capital ships—which, being extremely complicated, are a long time building—the fighting value of cruisers, destroyers, and submarines are magnified. The last two can be built in a fairly short time when the treaty restriction upon their number is suspended by the outbreak of hostilities. Aircraft too, the use of which in naval operations is increasing rapidly, can be put into quantity production on comparatively short notice. There never has, by the way, been any treaty restriction on aircraft.

Now all three of these categories —destroyers, submarines and aircraft with pontoons or boat hulls— have to be serviced by tenders, if they are operating at any considerable distance from their base. Aircraft that land on wheels require carriers. Cruisers and battleships must have repair ships available if they are to avoid long absences from their respective stations. Food for all personnel away from the base for protracted periods has to be brought by ships equipped to carry butter, eggs, vegetables, and frozen meat, besides dry provisions. Other ships are needed to bring up mines, ammunition, stores of all kinds and vast quantities of fuel. Hospital ships must be constantly at hand to care for the sick and wounded. Transports have to run back and forth with replacement personnel. Scores of smaller vessels may be needed for mining operations, submarine chasing and for patrol.

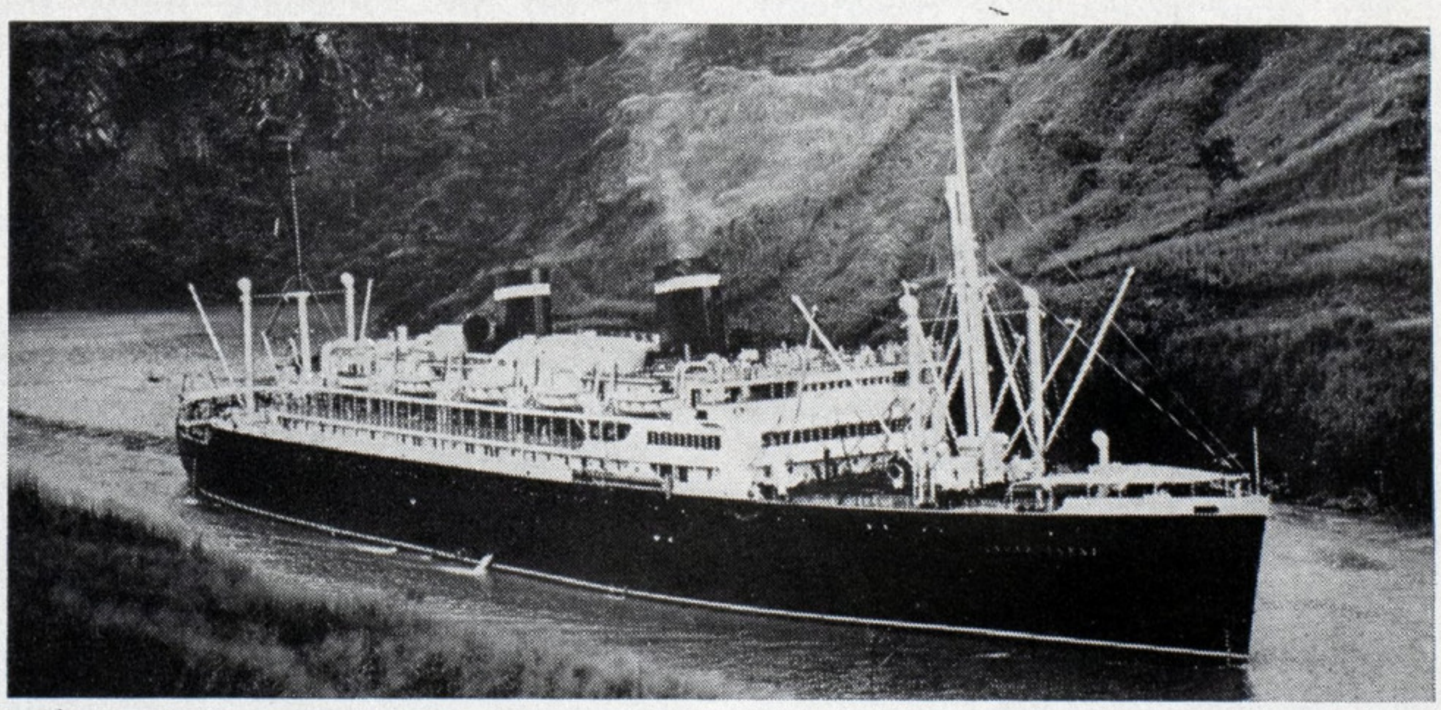
Navy Not Self Contained

Cruisers too, in very considerable numbers, would be needed in time of war by any power whose maritime interests are comparable with ours, whether that power were neutral or belligerent. The British had about thirty cruisers along its trade lanes for the protection of its commerce long after the Allies had virtually complete control of the sea during the World war.

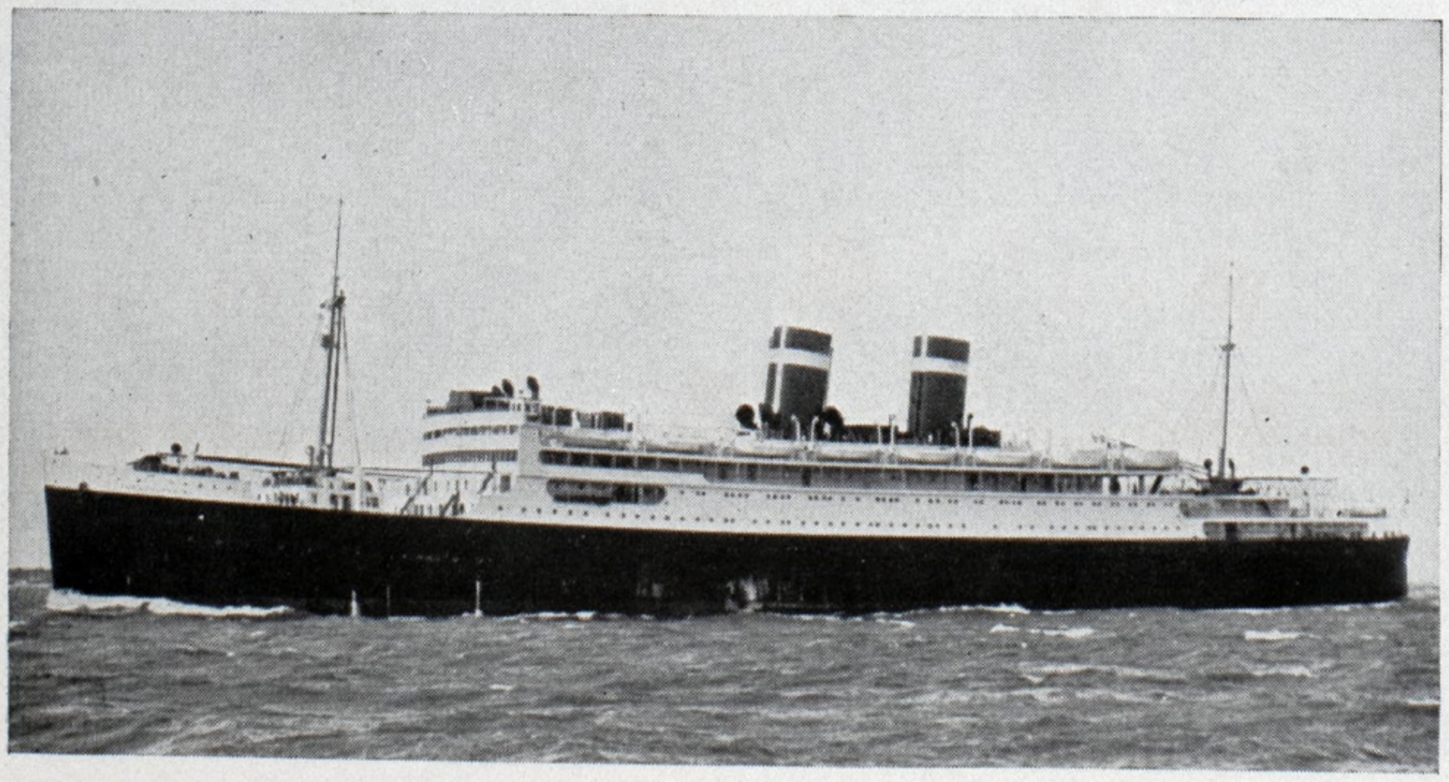
Obviously, therefore, on account of treaty restrictions and financial considerations, it is never practical to have in the navy during peace all the vessels that might be required in war. Consequently the navy has to look to the merchant marine for supplementary vessels.

Merchant type vessels that are suitable for these supplementary naval uses may be catalogued in six general classes, namely:

Class A—Fast passenger or combination ships capable of making 18 knots or more;



Above—S. S. Santa Elena—11,200 gross tons — Speed, 18½ knots — Completed, March 22, 1933—Sisterships, three—For Grace line service between East and West coasts



At left—S. S. Pennsylvania—20.526 gross tons—Speed, 18 knots—Completed, Oct. 10, 1929—Sisterships, two—Panama Pacific line, intercoastal service

Class B—cargo or combination vessels of three or more decks, 450-feet long, or longer, capable of at least 15 knots;

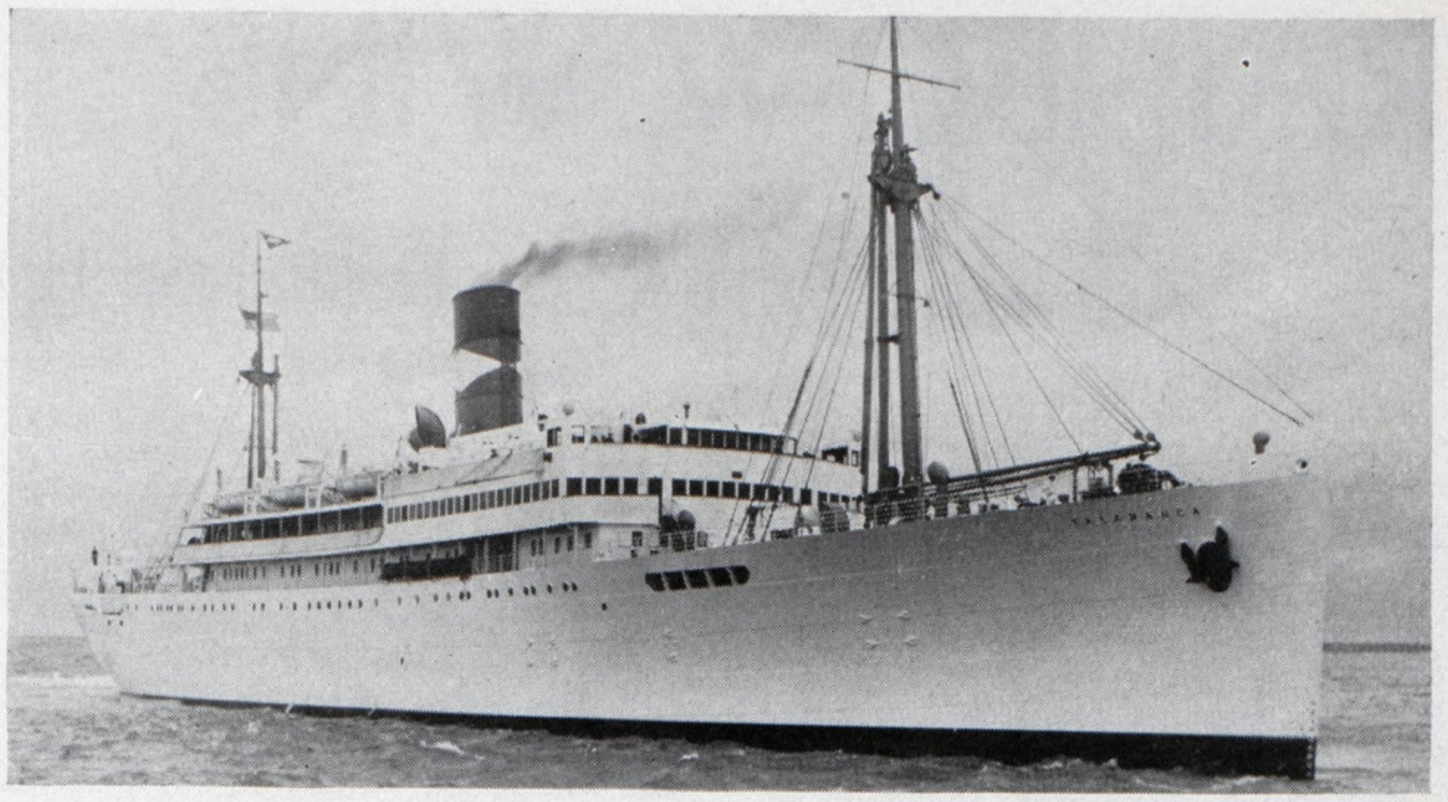
Class C—tankers, not less than 10,000 tons deadweight, preferably capable of 15 knots;

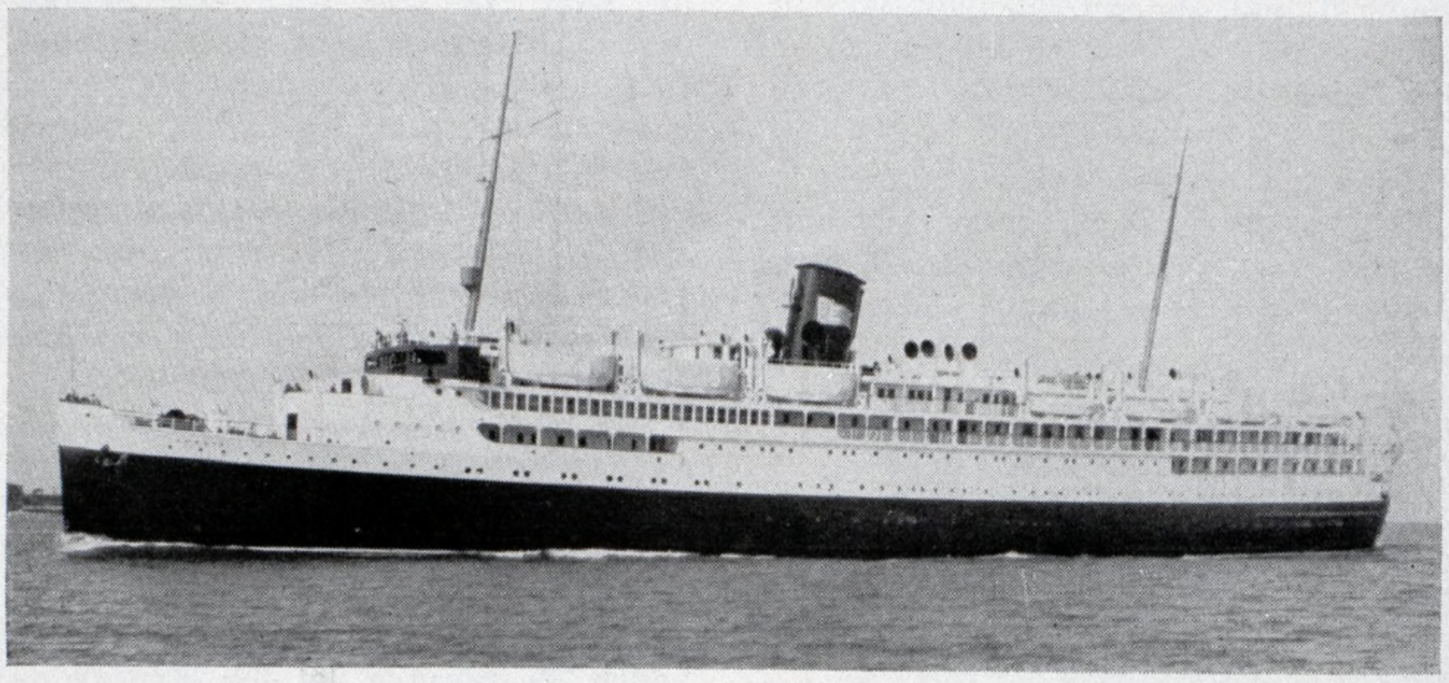
Class D—refrigerator ships having not less than 350,000 cubic feet of refrigerated space which can be held at a temperature below 20 degrees Fahrenheit in the tropics, preferably capable of 15 knots;

Class E—small sea-going types, like tugs, trawlers, or tuna-fishers;

Class F—large, high powered, sea going yachts.

All should have long cruising radius, at least enough to go across the Atlantic and back at top speed without refueling.





Above—S. S. Talmanca—6963 gross tons—Speed, 17½ knots—Completed, Dec. 12, 1931—Sistherships, five—For service of United Fruit Co.

At left—S. S. Acadia—6186 gross tons—Speed, 20 knots—Completed, June 7, 1933—Sistership, one—For Eastern Steamship line's service between the United States and Canada

Use is Defined

A Class "A" ship is suitable for conversion to auxiliary cruiser, aircraft carrier (if beam is 75 feet or more), destroyer tender, submarine tender, or transport.

A Class "B" ship can be transformed into a destroyer tender, a submarine tender, an aircraft tender, a repair ship, a gunboat (for detached duty in relatively quiet areas), a hospital ship, a transport, a mine layer, or mine depot ship, a supply ship, an ammunition ship, or can be left as an ordinary general cargo ship.

A Class "C", or a Class "D" ship would be used practically as it is, for its regular purpose.

Class "E" vessels are suitable for mine sweeping, towing, and to some extent as tenders for a few aircraft of the flying boat type.

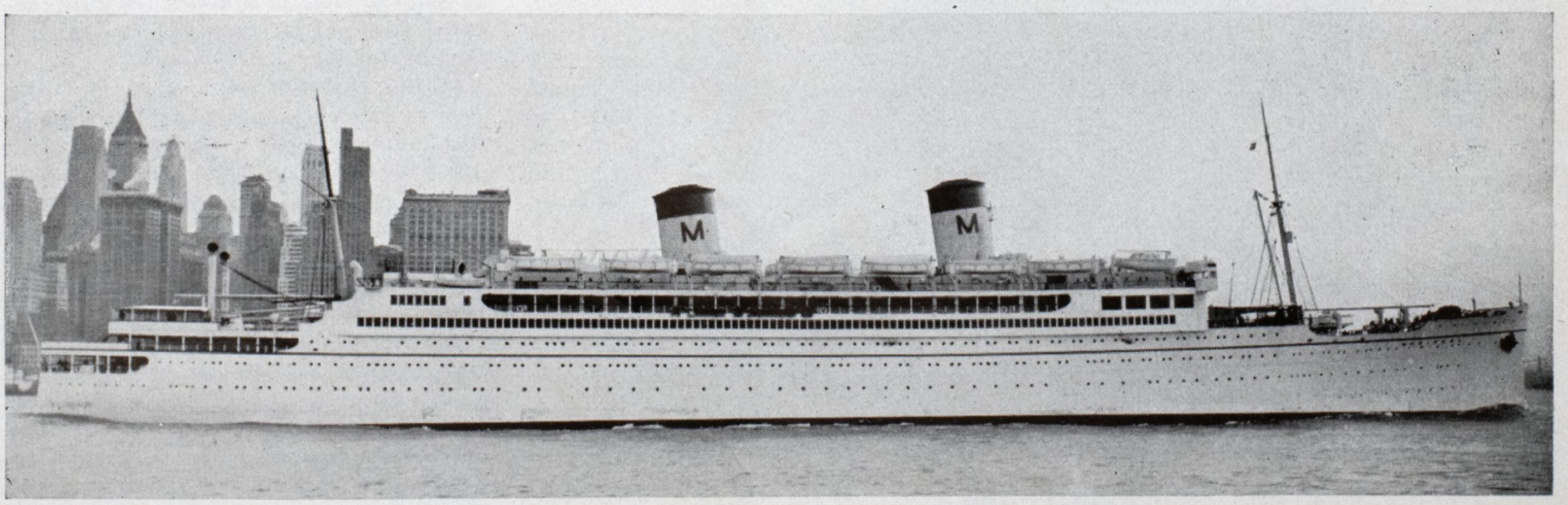
Class "F" is valuable for patrol or gunboat duty, and for submarine chasing.

Despite the depressed state of shipping all over the world since the post-war boom, forty-eight new vessels admirably suitable for use as naval auxiliaries have been added to the merchant marine during the past ten years, with the assistance of the government under the merchant marine acts of 1920 and 1928; twenty-nine other vessels have been reconditioned in such a way as to make them especially valuable. A few of these fine vessels are shown in the accompanying illustrations. Most of them are now running on mail contracts with the postoffice department.

Greater Speed Desirable

Under existing contracts, 45 more vessels are required to be constructed, or reconditioned, within the next few years, but unfortunately for their usefulness, the speed called for in the contracts for all but 13 of them is at least 10 per cent below what it ought to be in view of present trends of ship design. Whether or not these contracts are to be allowed to stand cannot be foreseen at this time, but it is inconceivable that the valuable aids to the merchant marine provided by the Acts of 1920 and 1928 should be abolished without the enactment of still more helpful statutes.

(*Continued on Page* 40)



S. S. Mariposa—18,017 gross tons—Speed, 20½ knots—Completed, Dec. 14, 1931—Sistherships, two—Matson line, Pacific Ocean service, West coast to South Seas, Australia and Hawaii

RAINBOW WINS

in Contest for the America's Cup

BY WM. BENNETT

THE American defender RAINBOW was declared the winner in the contest for the America's cup with the British challenger ENDEAVOUR, the RAINBOW winning the last four races and the ENDEAVOUR the first two.

The fourth race was protested by ENDEAVOUR on grounds of alleged infraction of the rules governing right of way. The race committee decided not to entertain this protest because it was not made promptly, in accordance with the rules. In the sixth race, protest flags were flown by both yachts. Shortly after the race, which was won by RAINBOW, the British challenger withdrew his protest and thus the victory went to the American yacht without further question.

The races were held off Newport, R. I. Harold S. Vanderbilt sailed the RAINBOW and T. O. M. Sopwith, owner and challenger, sailed the ENDEAVOUR.

The two contenders first met on Sept. 15, and, though RAINBOW was in the lead, it was declared no contest as she failed to finish within the time limit of 5½ hours.

The first race, Sept. 17, over a course of 30 miles, 15 miles out and return, was won by ENDEAVOUR with a lead of 2 minutes and 9 seconds in an elapsed time of 3 hours, 43 minutes and 44 seconds, while RAINBOW's time was 3 hours, 45 minutes and 53 seconds. This race seemed to show that the challenger is the faster boat before the wind.

The second race, over a triangular course, 30 miles in length, was held on Sept. 18 and was won by ENDEAVOUR, with a lead of 51 seconds. In this race, ENDEAVOUR gained 16 seconds in the first leg, and 1 minute and 15 seconds in the second leg. On the third leg RAINBOW regained 40 seconds of this lead. The total time was 3 hours, 9 minutes and 1 second for ENDEAVOUR, and 3 hours, 9 minutes and 52 seconds for RAINBOW.

The third race, Sept. 20, was over a 30-mile course, 15 miles out and return. This race was won by RAINBOW, with a lead of 3 minutes and 26 seconds, in an elapsed time of 4 hours, 35 minutes and 34 seconds, against 4 hours, 39 minutes flat for ENDEAVOUR.

The fourth race, Sept. 22, over a 30 mile triangular course, was won by RAINBOW with a lead of 1 minute and 15 seconds, in an elapsed time of 3 hours, 15 minutes and 38 seconds as against 3 hours, 16 minutes and 53 seconds for ENDEAVOUR. During the fourth race the sea was rough and the wind had a velocity of about 11 knots.

The fifth race, Sept. 24, over a 30-mile course, 15 miles out and return, was won by RAINBOW, with a lead of 4 minutes and 1 second, in an elapsed time of 3 hours, 54 minutes and 5 seconds, as against 3 hours, 58 minutes and 6 seconds for ENDEAVOUR.

The sixth race, Sept. 25, over a 30-mile triangular course, was won by RAINBOW, with a lead of 55 seconds, in an elapsed time of 3 hours, 40 minutes, and 5 seconds, as against 3 hours, and 41 minutes flat for ENDEAVOUR.

In the January issue of MARINE REVIEW a brief account was published of the famous yacht race of 1851, culminating in the victory of the AMERICA; together with a complete record of all the challengers and defenders engaged in the 14 contests which have taken place since the first contest in 1870.

It was welcome news to all concerned when a challenge was issued for a race this year, by T. O. M. Sopwith of the Royal Yacht Squadron. The challenger was designed and built by Charles Nicholson of Southampton, England, and the new ENDEAVOUR reached Newport, R. I., early in Au-

ENDEAVOUR
British Challenger

gust, since when, she has been sailing and tuning up, preparatory for the great yachting supremacy event of the year.

As soon as the challenge was received on this side, an order was placed with W. S. Burgess, designer of the ENTERPRISE, for the design of a proposed new defender, and the construction having been placed in the hands of the Herreshoff Mfg. Co., Bristol, R. I., the RAINBOW was delivered to her owners early in May.

From then till the end of August a series of eliminating trial races were carried out, with a view to selecting a suitable cup defender; the contesting yachts being WEETAMOE, YANKEE and RAINBOW. This proved to be a more difficult undertaking than had been expected, as both WEETAMOE and YANKEE, altered and improved since their 1930 sailing careers, showed unusual improvement in their sailing ability, especially the latter.

The comparative measurements of the above three yachts, also the successful 1930 cup defender ENTERPRISE and the 1934 cup challenger ENDEAVOUR are given in the accompanying table.

A series of preliminary trials were run, starting in June, in which YANKEE consistently proved to be the faster boat, and the odds were greatly in her favor, up to the start of the final trials which were carried out between Aug. 22 and Aug. 31. Eight races were run, between WEETAMOE, YANKEE and RAINBOW, and as sometimes happens in horse racing where a favorite drops behind and a less likely contestant comes up from the rear, the RAINBOW sailed by Harold S. Vanderbilt, won six firsts and one second, out of eight races; one race being abandoned due to the breaking of a strut on the YANKEE'S mast. The RAINBOW was therefore selected as the official cup defender.

Both ENDEAVOUR and RAINBOW are constructed of metal; the former of all steel construction, and the latter of bronze below the waterline and steel above. The ENDEAVOUR is 3 feet 3 inches longer in the waterline than the last defender, ENTERPRISE, 2 feet 3 inches longer than the last challenger, SHAMROCK V, and 1 foot 3 inches longer than the new defender RAINBOW. It is evident, therefore, that the ENDEAVOUR is somewhat larger than the RAINBOW, and both are fitted with centerboards. The striking feature about ENDEAVOUR is her beautiful form, and it is apparent that her designer was relying solely on her form, finish and handling to successfully contest the cup. During the season's racing RAINBOW has been undergoing many experimental changes in rig. She has abandoned the heavy triangular boom with transverse runners, which was so freely commented upon in the ENTERPRISE'S 1930 race with SHAMROCK V, and is now fitted with a flexible boom similar to that formerly tried and discarded by the British "J" class yachts.

RAINBOW
American Defender

ENDEAVOUR'S steel mast is about 3 feet longer than RAINBOW'S, and is 22 inches in diameter, against RAINBOW'S 30 inches fore and aft dimension. This provides a distinct difference in the appearance of the two yachts when looked at side on. The ENDEAVOUR'S spreaders are of chrome nickel steel, and her shrouds of thin steel rods. From this, it can be realized that the ENDEAVOUR is away ahead of SHAMROCK V in up-to-date equipment, if indeed, she is not also a step or two ahead of RAINBOW in that respect. ENDEAVOUR, too, is far ahead of her predecessor in the matter of deck winches, having geared winches for speedy handling of the main running rigging.

Comparative Measurements

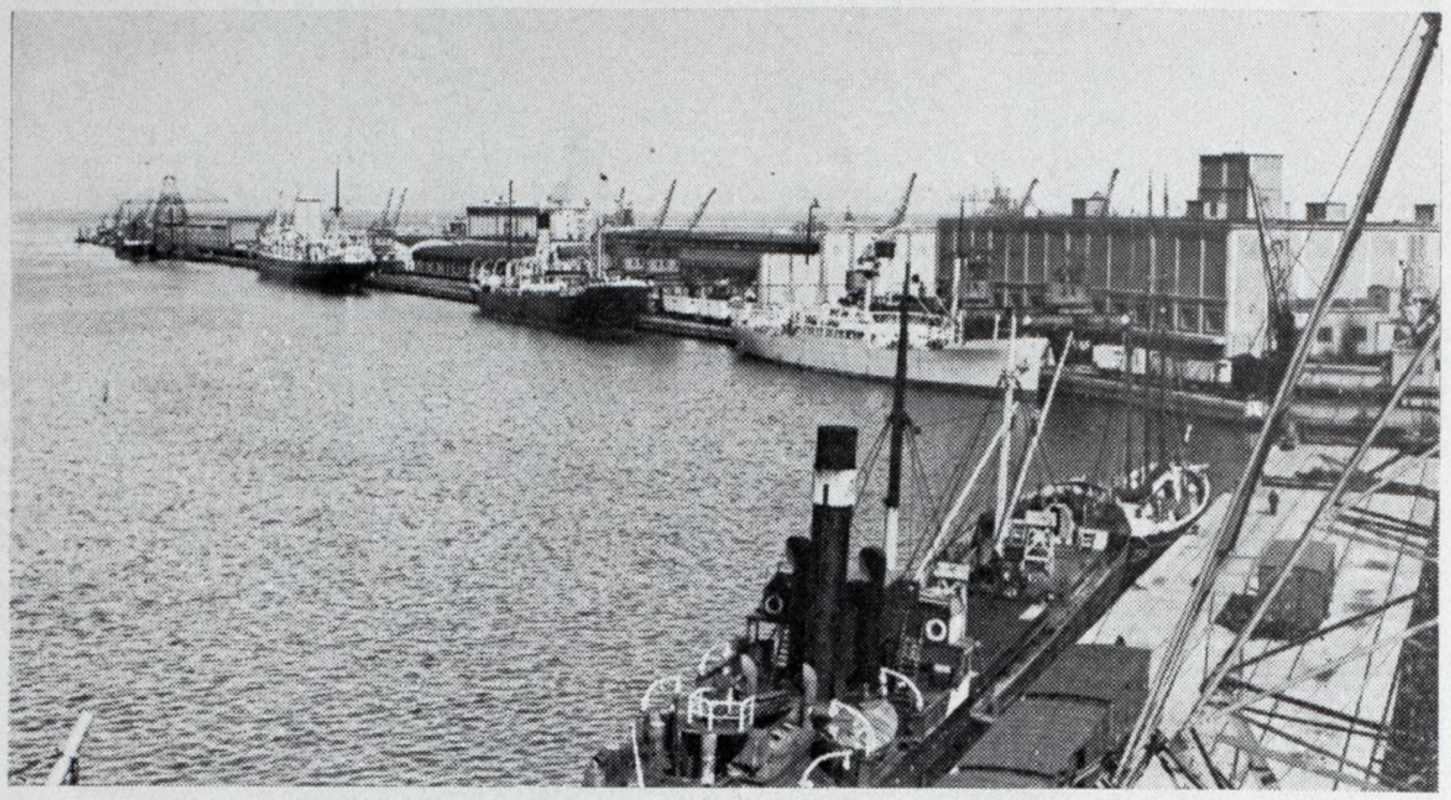
Name	Length O.A. ft.	in.	Length W.L. ft.	in.	Breadth ft.	in.	Draft ft.	in.
Rainbow....	126	7	82	0	20	11	14	11
Endeavour..	129	8½	83	3	22	0	14	10½
Enterprise...	120	9	80	0	21	10	14	6
Weetamoe...	125	9	85	0	20	3	15	4
Yankee.....	126	0	83	9	22	6	15	0

As pointed out in the previous article, the conditions of the race are now such as to eliminate as far as possible, any constructional advantage of the one yacht over the other. The strength and weights are similar; the cabin deck must be supplied with cabins and fittings of a weight of not less than seven short tons, or the deficit must be compensated for; each yacht must carry an anchor of not less than 490 pounds, and a 2½-inch diameter manila cable of not less than 50 fathoms length, or equivalent. Then the mast must weigh not less than 5500 pounds and have its center of gravity at least 42 per cent of its total height above the base, and a minimum diameter at the center of gravity of 18 inches. This eliminates competition in lightly constructed masts. These rules automatically eliminate the racing machine, and insures a race between wholesome, rugged, everyday yachts of good sea-going qualities. No running gear will be led below deck, as in the last defender, which will necessitate the majority of the crew being on deck.

PORT of GDYNIA,

Poland's Busy Gateway to the Sea

BY JOSEPH ELLNER



NOW—Port of Gdynia on the Baltic. Developed within the last ten years by the government of Poland. View shows the first inner basin used for passengers, general cargo, tobacco, sugar and refrigerated cargo

REBORN POLAND, with its tiny strip of coastline on the Baltic, has astonished the world by suddenly emerging, in recent years, as a full-fledged maritime nation. A merchant marine is being built up, a navy is steadily expanding, Poland's growing exports and imports are flowing through sea paths to a greater extent each year, steel rails spread inland. The hub of all this new life lies at Gdynia, Poland's own bay-window to the world, which has sprung up in the last decade into one of the most modern ports in Europe.

Millions of dollars have been spent by the Polish government to create her gateway to the sea, and a survey of this infant of ports stamps it as one of the miracles of the century. A bare ten years ago, Gdynia was nothing but a tiny village housing 50 fishermen, isolated from the commercial and industrial regions of Europe. Today, a great sea wall nine miles in length extends into the Baltic forming a protected harbor in which the navies of the world might safely anchor.

In the made-to-order city there are bustling boulevards and promenades, banks, hotels, a population of 60,000 souls, a yacht club, numerous public buildings. While the world struggles in the throes of an economic depression, Gdynia has never stopped humming with activity, and more building goes on there than anywhere in Poland. Particularly active are its up-to-date port facilities—portal cranes, warehouses, a floating dock, rice-husking plant, oil mill, coal transshipment equipment, all that the perfect port requires for efficient operation.

Building Two Liners

Having created a port of which it is justly proud—although construction on the harbor still continues in places—Poland is now directing more attention than ever toward the development of an adequate merchant fleet. To improve direct communication between Gdynia and New York via Halifax, it has ordered two new crack liners for the Gdynia-America line, which the government controls. The new ships have become necessary to accommodate the increased traffic to Gdynia.

The last word in construction, safety, appearance and comfort, the new liners will each be of about 15,000 gross registered tonnage. The ships will be 515 feet long, 72.6 feet wide and 37.6 feet deep. There will be gyropilots, gyroscopes, an electro-hydropneumatic steering system and such features as special garages for passengers' motor cars. The new vessels, being built at the Monfalcone Shipyards at Trieste, where the CONTE DI SAVOIA and other famous liners were built, will be run by two oil motors, suitable for European fuel, of Sulzer type, developing 12,000 horsepower. Two boilers operated by exhaust gases will serve as a heating system.

They will furnish the fastest direct service between New York and the Baltic, Poland, Scandinavia and the vast hinterland of Central Europe as well as Russia. It will take only eight days to make the trip, while the present running time is twelve days. The first vessel will be ready for service in the summer of 1935.

The port of Gdynia, entered directly from the Baltic Sea, is situated on the southwestern coast of the Gulf of Danzig; its latitude is 54°32′ N and longitude 18°34′ E of Greenwich. Danzig is only 12 miles away. Gdynia is sheltered from the open sea by the peninsula of Hel, the extending promotory of which screens the bay from the northeast. Winds are light, waves are seldom high, and the Baltic is practically tideless at this point. Anchoring in the roads, which have

◆

THEN — What the port of Gdynia looked like ten years ago. A fishing village of 800 inhabitants

◆

sandy bottoms, is safe and convenient under all conditions, and there are no rocks or other obstacles to navigation. The largest liners find the port easily accessible as the water in the entrance roads ranges from 30 to 45 feet in depth.

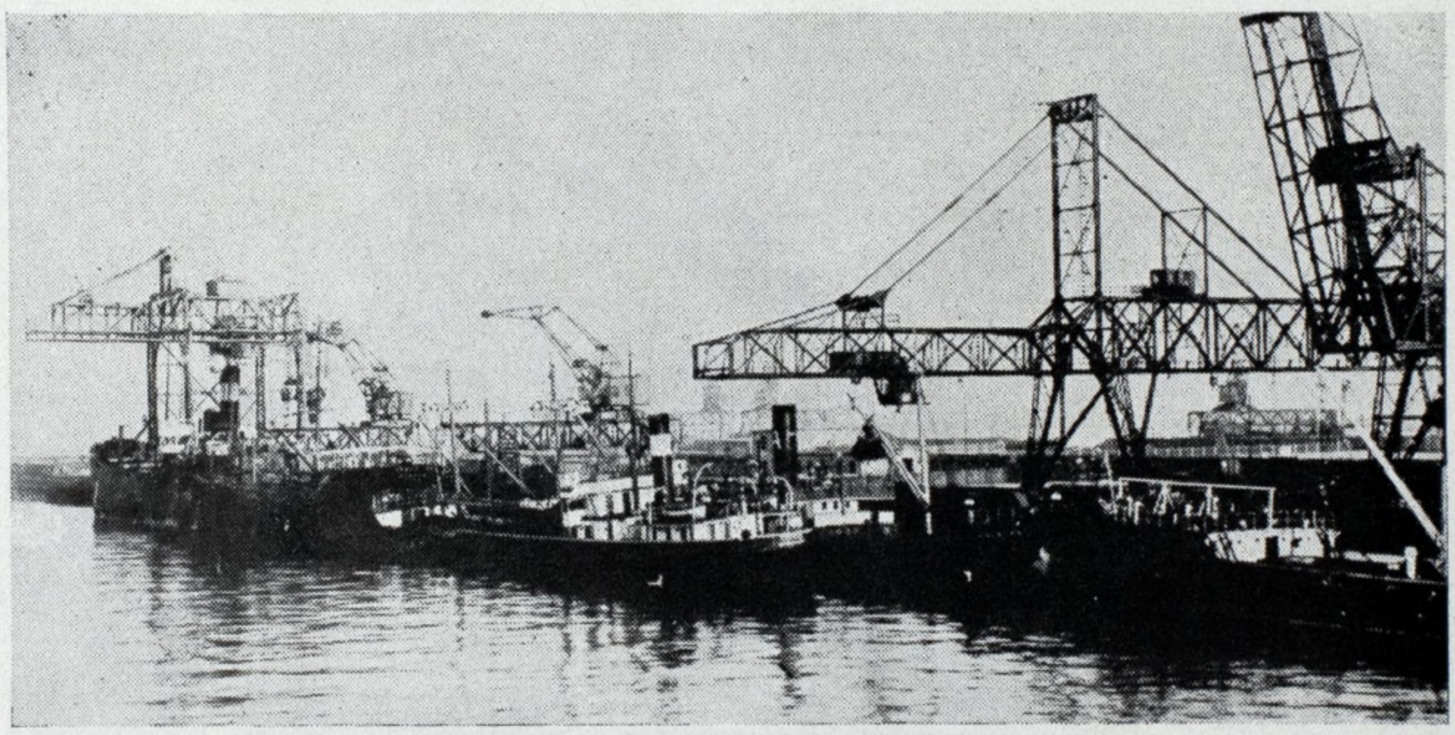
Compared with a number of other Baltic ports, Gdynia has the advantage that even during a very severe winter, it can be kept open to navigation, the harbor rarely freezing over. Even when frozen, it can be made accessible by means of ice breakers. The navigational equipment of the port includes a radiobeacon, a submarine oscillator, a pendulum oscillator, and a submarine oscillation used only during thick fog or snow storms.

Advantages of Gdynia's Location

Situated on the southern coast of the Baltic, Gdynia lies at practically the same distance from a number of important Baltic ports such as Stockholm, Riga and Copenhagen. While it is the northern outlet of the routes from Poland, at the same time it is the geographical center of transit routes from the Scandinavian countries. Since a seaport is valuable in direct proportion to the hinterland it serves, Gdynia's importance lies in the fact that the port taps some seven inland countries with a population equal to that of the United States east of the Mississippi. All geographic, economic and technical considerations point to Gdynia as destined to play a dominant role as a transit port in the flow of trade from the entire Slavonic economic area. Its position at the central northern point of central and eastern Europe enables it to take an important part in the trade between England, the Scandinavian and Baltic states, and the Near East; for serving, indeed, as a link on the routes Baltic-Black sea, Baltic-Aegaen and Baltic Adriatic.

Its favorable location has made of Gydnia a center both of railway-maritime and of pure maritime transit. In pure maritime transit, Gdynia fills the role of trans-shipment port, taking in certain goods to be re-transported by sea. The basis of this transit trade is the industrial output of the Baltic states, which sell their surplus products in the Mediterranean and Levantine ports. Among these products are paper, cellulose, pasteboard and paper products. In the railway-maritime transit traffic, industrial Czechoslovakia is of greatest importance, while trade with Roumania, the Levant, Yugoslavia, Hungary and the Baltic ports continues to increase each month. With Soviet Russia, too, Polish transit trade has been developing in tar, ore, oil, whale oil, corn, timber and other products.

THE transformation, within the past ten years, of a fishing hamlet on the southwest shore of the Baltic to a well equipped modern seaport is one of the outstanding maritime developments in recent times. After securing an outlet to the sea the government of Poland with great energy and determination has made the most of it with the result that Gdynia is now an important factor in world commerce, and of high economic value to the nation. Since it was planned as a whole it was possible to take full advantage of modern experience in port equipment and development.



Above — Electrically operated cranes for cargo handling at the port of Gdynia

At left — Entrance to Gdynia harbor. breakwater and radiobeacon station

Ports Physical Characteristics

Gdynia is composed of an outer harbor and an inner harbor connected by a common outer basin to which the main entrance from the sea leads. The outer harbor, built by excavation, includes the outer basin, the south basin, the coal basin and the president's basin. The inner harbor, which is formed by the wharves, includes the port canal, Marshall Pilsudski's basin and the second basin. Access to the inner harbor is available through two entrances in the outer basin. The main entrance canal is 40 feet deep, while the President's basin and the south basin have separate entrances directly from the sea and vary from 30 to 50 feet in depth. The outer basin, in addition to the water space bounded by the breakwater on the side of the sea, and by the wharf on the west, includes also the north basin, used by the navy, and the coal basin. The passenger pier, which is 1312 feet long and 391 feet wide, is located to the south of the entrance canal. North of this pier is French wharf, which is also able to handle passenger traffic. An indication of how world-wide has been the acceptance of Gdynia is evidenced by the names of some of the wharfs: Wilson, English, Silesian, Swedish, Danish, Dutch, Belgian, French, Rotterdam, Indian, Norwegian, American, Czecho-Slovakian, Roumanian.

The entire export of Polish coal is handled at the coal basin, next to the passenger pier. The best equipped wharf in the area is the Swedish, which has a crane for handling coal wagons with a capacity of 445 tons

an hour, and four 7-ton coaling bridges. Two coal tips, one of 5 tons and the other of 7 tons, are owned by the port authority and are located on the coal pier.

The fish pier, the English wharf and the Silesian wharf are found in the south basin. A small auxiliary basin used at present by the Danzig Shipyard is in the northwest section. Here is located the shipyard's repair shops and a floating dock with a lifting capacity of 3000 tons. Next to the shipyard there is a slip for the cutters belonging to the Sea Fishery institute. Sheds for the storage and sale of fish are provided on English wharf and are equipped with their own refrigerating and storage plants and space for sorting, storing and selling both fresh and frozen fish. South of the fishing pier, the President's basin is given over to tourist and coastal traffic.

Pilot's wharf, on the south side of the inner harbor, houses the office of the harbor master and port shed No. 1, the latter equipped with two portal cranes of 5-ton capacity each. This shed is utilized for storing general merchandise and is composed of two divisions: the first is occupied by the railway customs agency and is used for storing dutiable goods; it is thus really a public customs warehouse. The second section of the shed is used for storing bulk cargoes such as artificial fertilizers.

Largest of all port basins is Marshal Pilsudski's basin, behind pilot's wharf. It includes Indian, Rotterdam and Polish wharves. On the Polish wharf are a number of warehouses used for transshipment and storage of general cargo.

Good Port Facilities

The port refrigeration plant, the second largest of its kind in the world, was built in 1930 on the Polish wharf, alongside government shed No. III. The total storage space in the plant is 150,600 square feet and the area of refrigerated space is 75,300 square feet. In this ultra-modern plant, the refrigerated chambers can accommodate 700 carloads of perishable goods needing specially low temperatures, such as bacon, butter, poultry, eggs and frozen meats. Inside the plant the railway cars are unloaded and the goods conveyed to ships by a special 1½-ton crane. Thanks to these installations transshipment of goods is protected from rain, dust, and changes of temperature. Low charges for storage and refrigeration permit extensive exploitation. A provisional slaughterhouse for poultry and a laboratory for testing samples of export butter are located next to the refrigerating plant.

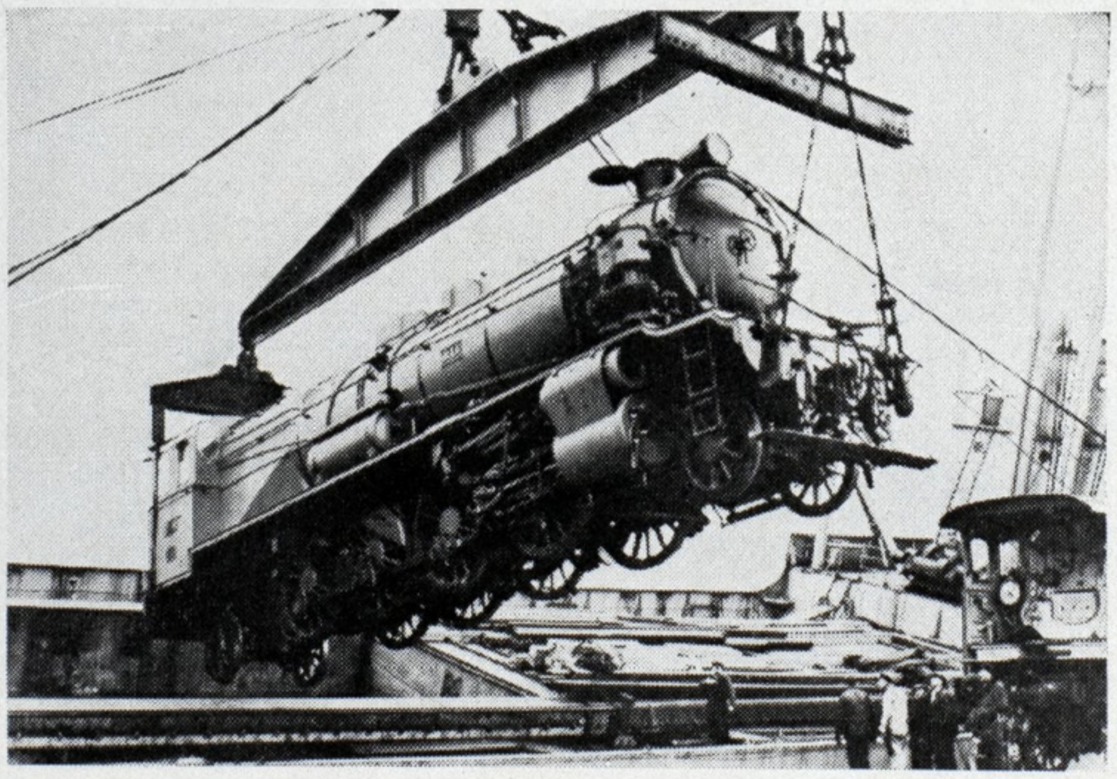
Fourteen traveling portal jib cranes with a capacity of from 1½ to 3 tons, are used to handle cargo on the Polish wharf. Five portal jib cranes of the same capacity are used on the Rotterdam wharf.

Manufacturing industries, so far, have been concentrated chiefly on the Indian wharf. Prominent among them is the rice husking plant, the first large industrial enterprise organized in Gdynia, and the largest in the port. With its equipment, the plant can handle over 150,000 tons of raw rice a year; most of it is imported from the Rangoon, British Indies, some from the United States. About one-fourth of the rice produced is exported to the Scandinavian and Baltic countries, and to Czechoslovakia, Rumania, Hungary, Germany, England and the Levant. So mechanized is this modern plant, that in the entire five-story building only five workmen are employed. Inside of 25 minutes, a grain of raw rice travels through all the stories of the building, during its journey being subjected to 16 different machines and finally reaching the sack without being touched by a human hand.

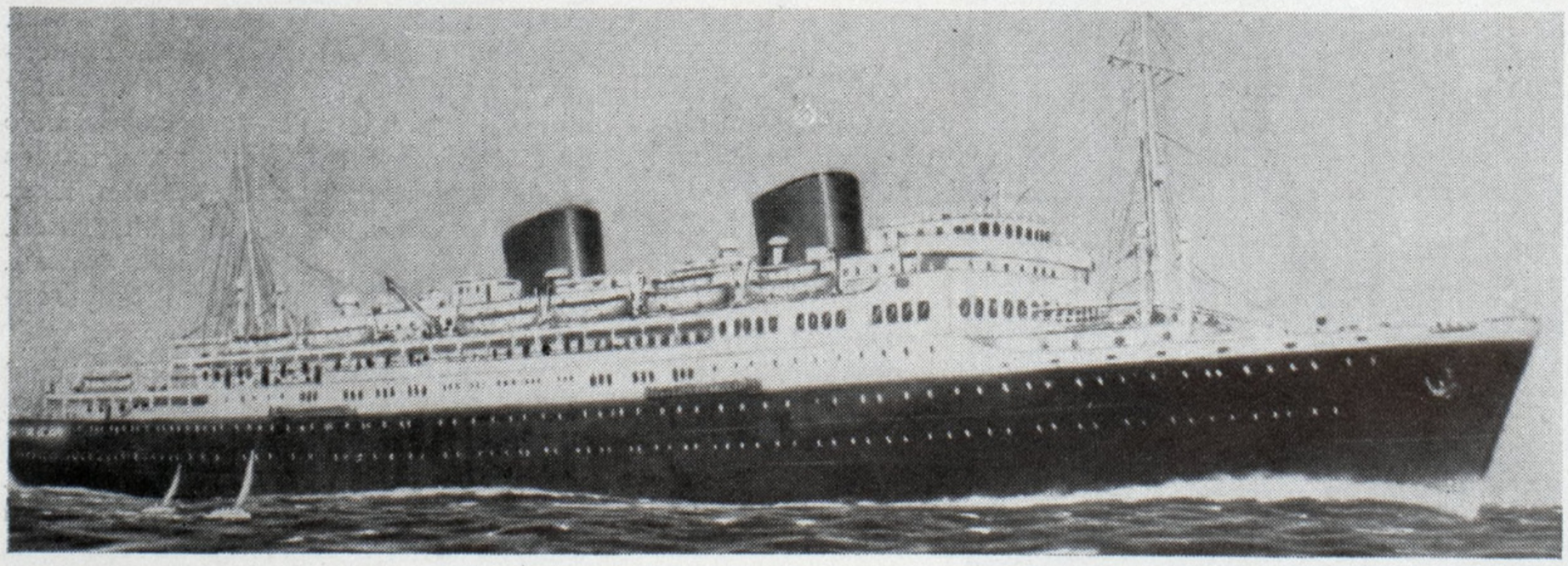
The oil mill, another large manufacturing enterprise, is situated next to the rice-husking plant. Besides the necessary manufacturing installations, the mill is equipped with a large silo of 6500 tons capacity, with modern pneumatic and belt conveyors, and oil-cake warehouses. Such oils as palm oil, paint oil, linseed, sunflower seed and machine oil are produced, chiefly for the home market. The by-product, oil cake, is exported. On the site behind the oil mill, the Polish government intends to construct a modern grain elevator with a capacity of 15,000 tons for export purposes.

On the harbor territory there are special facilities such as coal and oil bunkering stations, fish hall and refrigerator, fish preserving establishments, molasses reservoirs, grain silo, floating dock, sanitation water pipes, harbor ambulance and the necessary pilot and tugboats.

To take care of the continued increase of traffic through Gdynia,

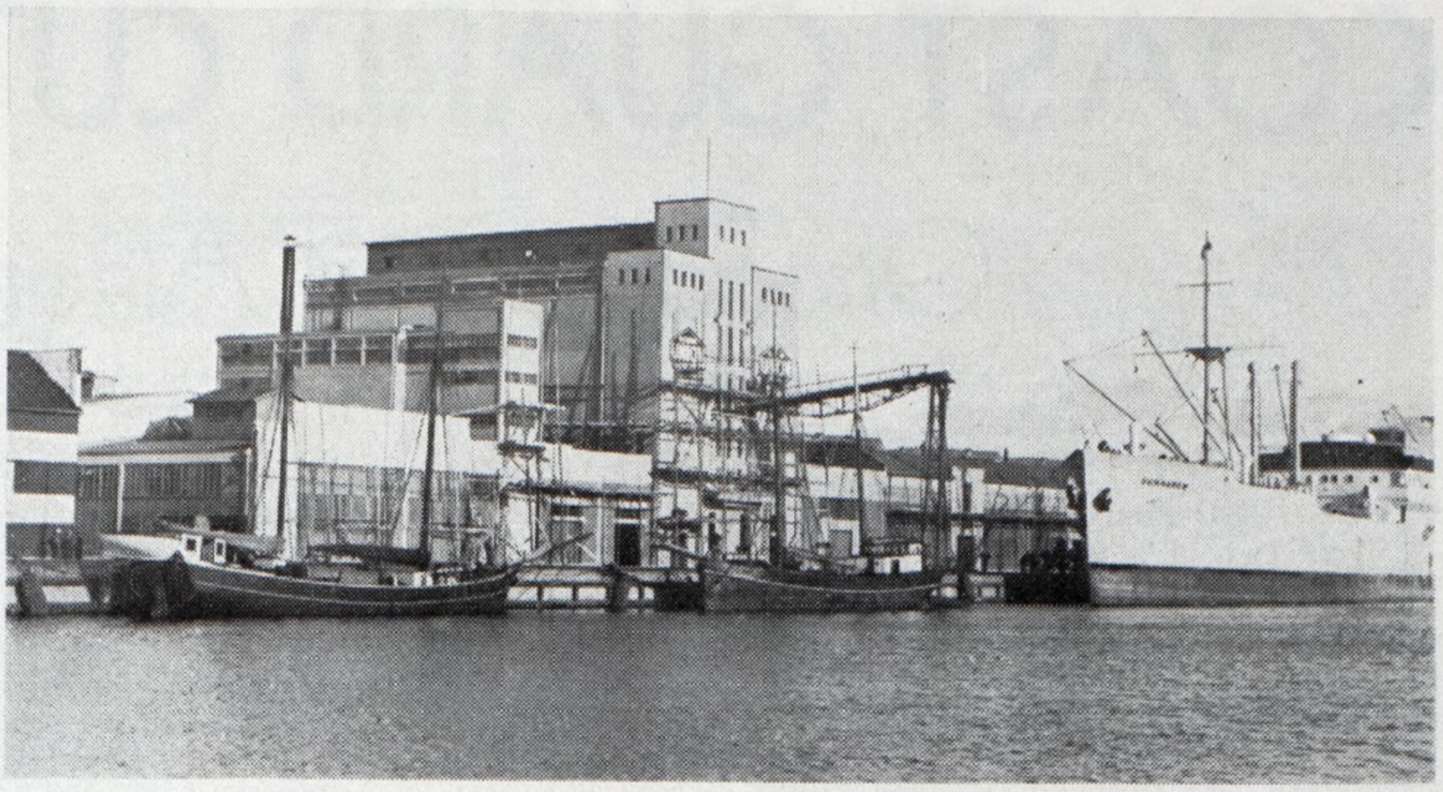


Loading a Polish built locomotive into the hold of a Gdynia-America vessel at the port of Gdynia. For delivery to the State Railways of Morocco



Artist's drawing of one of the two new passenger liners now under construction and to enter the service of the Gdynia - America Line in the summer of 1935

railway facilities are being intensively expanded each year. To date, there are more than 100 miles of railway tracks in the port, while transit traffic through Gdynia to Russia, Rumania, Hungary and other Central European countries has already started. Among the important railway lines between Gdynia and the hinterland are those connecting the Polish seaport with Berlin, Pomerania, Danzig, Warsaw, Russia and Rumanian stations, the Czechoslovakian border and German Upper Silesia. By freight train, Gdynia is only 54 hours from Russia, 37 hours from Czechoslovakia, 67 hours from Rumania and a few hours from Germany. The new railway from Upper Silesia to the Baltic, which assures Poland's economic freedom by connecting Poland directly with the industrial centers of Europe, will prove of incalculable value.



Above—Wharf of the oil mill at the port of Gdynia with ocean going vessel alongside

At left—Passenger vessel alongside dock adjacent to the new railroad station at Gdynia

Forty Regular Lines

Despite the fact that Gdynia is the youngest of world ports the development of its sea connections is already considerable. It has 40 regular lines and connections with 120 American and European ports. Most recent of these connections was the opening of regular service between Gdynia and the ports of the Far East, among others Penang, Port Swettenham, Singapore, Hong Kong, Shanghai, Kobe and Yokohama. Ships leave for New York every fortnight, for Buenos Aires every six weeks, for Le Havre every ten days, for Helsingfors every two weeks, for London and Hull every week, for Riga and Tallinn every ten days, for Libau every fortnight and for the Far East every three weeks. In response to the demand for Jewish emigrants to Palestine, the Gdynia-America line recently established a steamship service from Constanza, Rumania to Haifa and Jaffa, Palestine.

As a maritime center, Gdynia has already had ample experience in coping with a wide variety of cargo and in meeting the needs of ship traffic generally. Today, there are 23 forwarding firms in the port, 10 ships' brokerage firms and 4 shipowning firms. There is a total of 24 sheds and warehouses, with a joint storage area of about 1,614,000 square feet, about one-third of which belongs to private warehousing and forwarding firms.

The Port's Free Zone

Among the many factors which have been attracting commerce to the new port has been the establishment of a free customs zone. Brought into practical use on Jan. 15 of this year by the receipt of the first cargo to be warehoused there, the zone consists as yet of Minister Kwiatkowski's basin, close by the American, Czechoslovakian and Rumanian wharves, and the adjacent territory. The total area today is about 99 acres, of which about 37 acres is water space and about 62 acres land. The area of the free zone can be increased at will.

Three large warehouses have been constructed for the storage and handling of goods in the free customs zone. These include a cotton warehouse and two warehouses for other cargoes. Among the more important articles stored in the zone for later transit or re-export are raw materials for textiles, such as cotton, jute, and wool; raw hides and tannins, raw material for foundries, raw material for the manufacture of fertiizer, Finnish, Swedish and Czechoslovakian paper and a large number of colonial products. Goods stored in the free customs zone and not subject to customs control can be exhibited at any moment to clients, and importers are at liberty to accept orders and adapt their goods to the requirements of the market or customer in question. This is expected to result in a lively commerce in the free customs zone. At the same time, a number of industries are expected to spring up in the area, particularly for the manufacture of products from raw material. Among them will be such industries as coffee roasting, tanning work, the cleaning and preparing of wool, canneries, etc.

By the freedom of import which it allows, the free zone is doing much to enhance the importance of Gdynia as a center of international trade. It constitutes a trade route junction from which goods can be re-exported to other ports falling within Gdynia's sphere of influence. Already Lithuania, Finland, Latvia, Hungary, Esthonia and other countries have hastened to avail themselves of Gdynia's free zone facilities. Czechoslovakia has made Gdynia its official port, exporters and importers shifting their routes to take advantage of facilities there. Czechoslovak trade through Gdynia, last year was more than four times that of the year before. Bata, the world famous shoe manufacturing concern, constructed a warehouse at Gdynia, and other

(*Continued on Page* 38)

COAST GUARD CUTTERS,

Onondaga and Algonquin Completed

BY A. H. JANSSON

THE OONONDAGA and ALGONQUIN, first two of a program of five single screw, geared turbine propelled coast guard cutters, especially designed for effective ice breaking in addition to customary service, have now been completed. The remaining three, TAHOMA, COMANCHE and MOHAWK, are scheduled for completion as follows: TAHOMA about Oct. 20; COMANCHE, Nov. 3; and MOHAWK, Dec. 8.

Award of contract for this first group of five vessels in the current shipbuilding program of the United States coast guard was announced Oct. 26, 1933. The ALGONQUIN, COMANCHE and MOHAWK were awarded to the Pusey & Jones Corp., Wilmington, Del., at a bid of $499,800 each. The ONONDAGA and TAHOMA were awarded to the Defoe Boat & Motor Works, Bay City, Mich., at a bid of $563,800 each.

The two vessels awarded to the Defoe Boat & Motor Works are generally similar in all respects to the cutter ESCANABA, completed by that company in November, 1932. The three vessels awarded to the Pusey & Jones Corp. are also generally similar to the ESCANABA, except that they are fitted with Westinghouse Electric & Mfg. Co. geared steam turbines and Foster-Wheeler boilers in place of De Laval Steam Turbine Co. geared steam turbines and Babcock & Wilcox boilers.

Where They Will Be Stationed

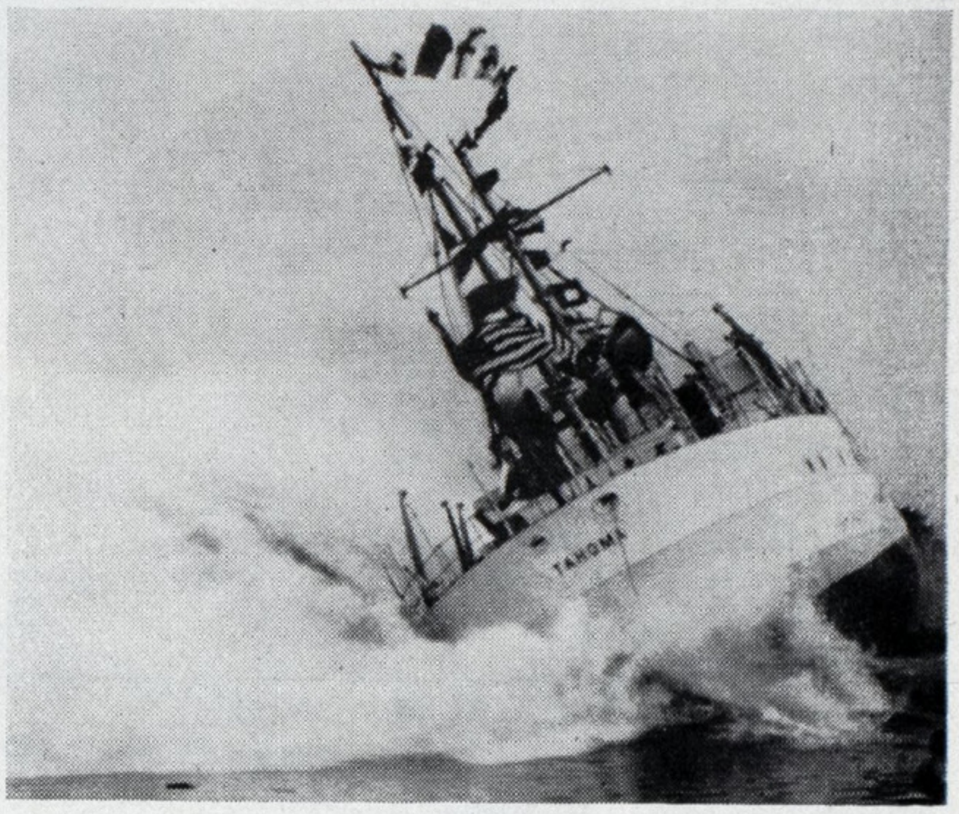
When they enter service the ONONDAGA will be stationed at Astoria, Oreg.; the TAHOMA at Cleveland; the ALGONQUIN at Woods Hole, Mass.; the COMANCHE at New York, and the MOHAWK at Cape May, N. J.

The vessels are of extremely sturdy construction, the lower hull plating being 7/8-inch thick, with a waterline strake of 1-inch thickness. The bow and forefoot is shaped and constructed for heavy icebreaking, and they are therefore, especially adapted for general rescue work in frigid waters. They are cork insulated against cold weather and the heating systems are designed for operation in subzero temperatures. The ESCANABA, prototype of these vessels, in service throughout one winter on Lake Michigan, demonstrated her ability to steam steadily, without backing and filling, through 20 inches of solid ice on her rescue mission to Beaver Island.

All of these vessels are equipped with the latest aids to navigation, such as gyro and spherical compasses, radio course finders, radio sending and receiving apparatus, electric and mechanical sounding machines and signal apparatus. The TAHOMA, to be stationed on Lake Erie, carries two six-pound guns, the largest permitted by treaty with Canada. The others carry 2 three-inch anti-aircraft guns.

The construction of the three vessels at the yard of the Pusey & Jones Corp. has been under the supervision of Commander J. F. Hahn, of the United States coast guard as resident inspector. Construction of the two vessels at the Defoe Boat & Motor Works has been carried out under the supervision of Commander M. A. Doyle of the United States coast guard. As an indication of the length of time it takes to build one of these vessels, it may be noted that the keel of the COMANCHE was laid on Jan. 16, 1934. This vessel was launched on Sept. 6 and is scheduled for delivery Nov. 3.

Like all cruising cutters of the coast guard, these vessels have been designed to stay at sea in any weather and for



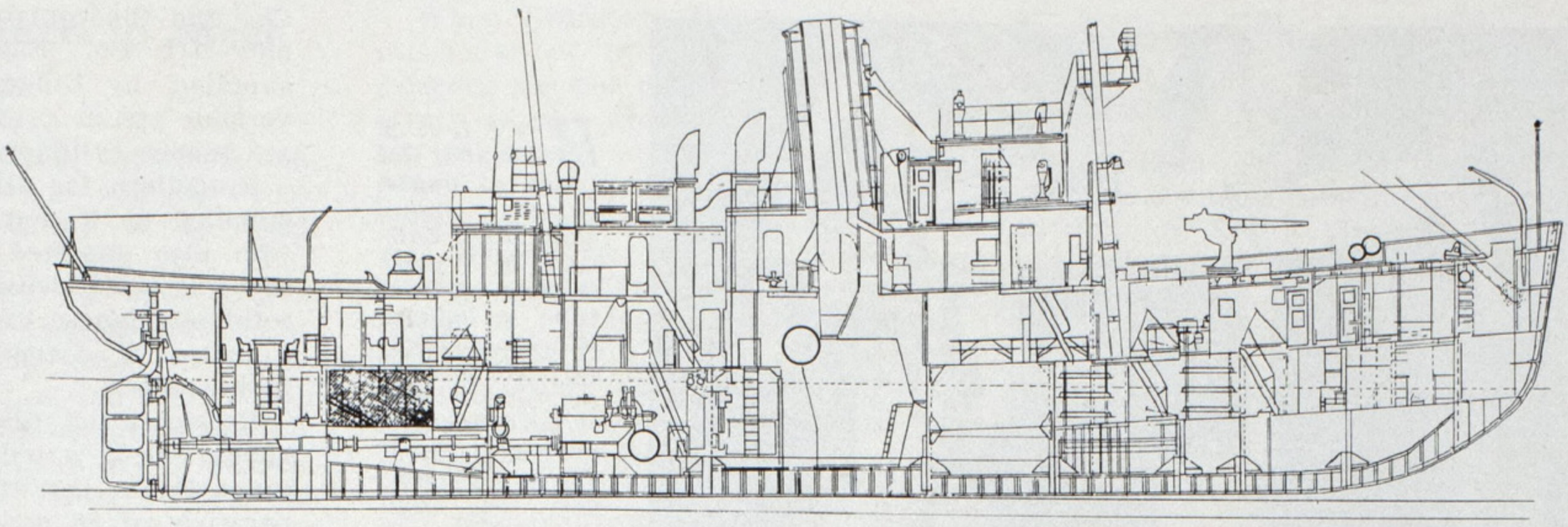
TAHOMA, second coast guard cutter, launched Sept. 5, at the Defoe Boat and Motor Works. The sponsor was Miss Barbara Crosser of Cleveland. This vessel is a sister ship in all respects of the Onondaga, shown on the opposite page. Trials and standardization runs of the Tahoma are scheduled for Oct. 15. On completion she will be stationed at Cleveland

Principal Particulars

Names—Onondaga, Tahoma, Algonquin, Comanche and Mohawk
Builders—Onondaga and Tahoma, Defoe Boat & Motor Works; Algonquin, Comanche, and Mohawk, The Pusey & Jones Corp.
Owner.....United States Coast Guard
Launched—Onondaga, Aug. 2; Tahoma, Sept. 5; Algonquin, July 25; Comanche, Sept. 6; Mohawk (scheduled), Oct. 23.
Completed—Onondaga, Sept. 11; Tahoma (about) Oct. 20; Algonquin, (about) Oct. 1; Comanche (about) Nov. 3; Mohawk (about) Dec. 8.

Length overall, feet, inches	165 0
Length between p.p., feet, inches	150 0
Beam molded, feet, inches	36 0
Depth molded, feet, inches	21 0
Draft, maximum, feet, inches	13 0
Displacement, loaded, tons	1000
Propelling machinery, double reduction geared turbine, single screw, s.h.p. @ 140 r.p.m.	1500
Boilers, oil burning, watertube	2
Steam pressure, at superheater outlet, lbs.	310
Steam temperature, degrees Fahr., abt.	640
Superheat, degrees Fahr.	200
Complement	officers, 6; men 56
Speed, miles per hour	15
Cruising radius miles	2000

Algonquin, built by The Pusey and Jones Corp. To be completed about Oct. 1



THE Onondaga and Tahoma. The arrangement is generally similar for the Algonquin and sistership

making rescues under the most adverse conditions. Reference has already been made to their ice-breaking qualifications. Sturdiness is an outstanding feature of their construction, and the frames are unusually closely spaced. They are of flush upper deck design, straight raked stem and the conventional cylindrical overhung stern. In addition to the upper deck there is also a continuous main deck throughout, as well as an orlop or berth deck, which extends from the stem to the forward bulkhead of the boiler room.

The boiler room is located almost exactly amidships and the center of the stack where it emerges through the deck house is only a few inches aft of amidships. The machinery space set off by watertight bulkheads is directly aft of the boiler room.

Quarters for the crew and petty officers are located on the main and berth decks forward. The ward room is located aft on the main deck.

The power plants of all of these vessels incorporate the latest marine engineering developments and are designed and constructed for dependability and efficiency. Since these power plants are quite different in detail, they will be described separately.

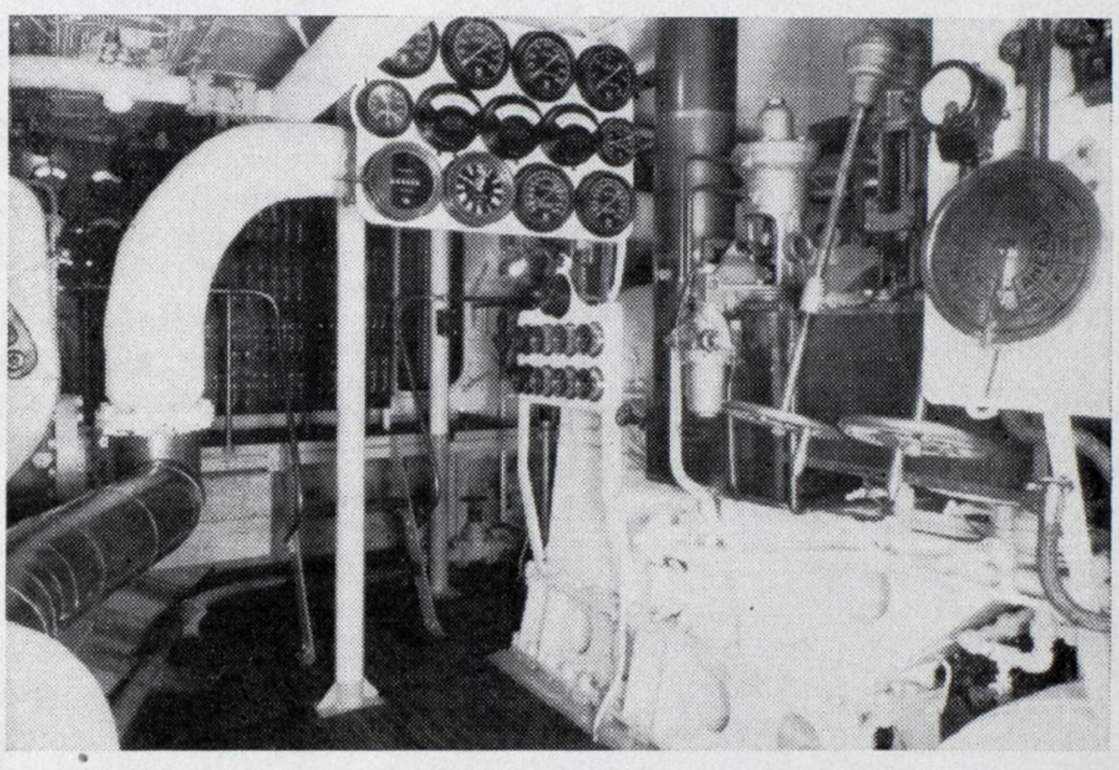
Propelling Machinery, Onondaga

In the ONONDAGA and the TAHOMA the main propelling machinery consists of one marine steam turbine connected to a single propeller through double reduction gears. With 300 pounds per square inch steam pressure, 200 degrees superheat and 27½ inches of vacuum, the rating of this turbine is 1500 horsepower at 7500 revolutions per minute. The turbine speed is reduced through the gearing to a normal maximum propeller speed of 140 revolutions per minute. The speed of the vessels is 13 knots. The main propelling machinery for both of these two vessels was supplied by the De Laval Steam Turbine Co.

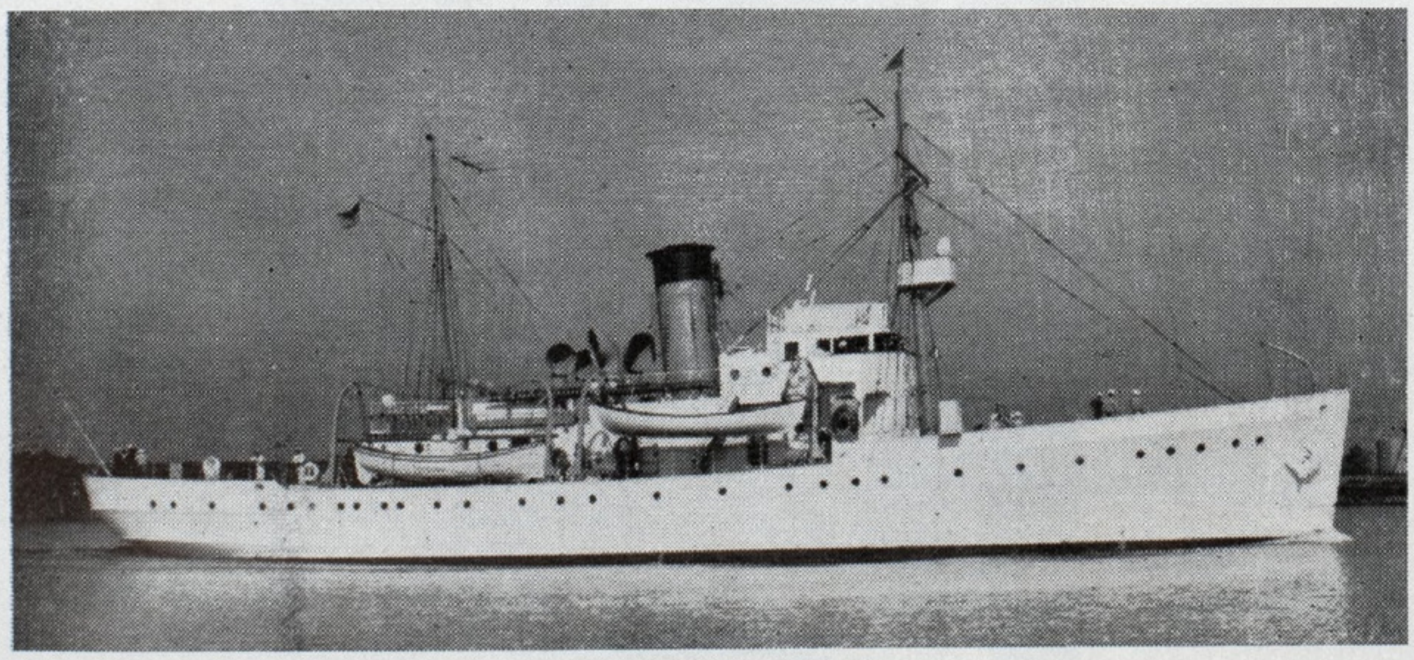
Steam is generated on these two vessels by two Babcock & Wilcox marine watertube boilers operated with a working steam pressure, at the superheater outlet, of 310 pounds per square inch and with 200 degrees Fahr. superheat. The heating surface of each boiler is 2463 square feet, giving a total of 4926 square feet for the two boilers. Each boiler also has a superheating surface of 222 square feet. The boiler tubes are of 2-inch diameter. Each boiler is fitted with three Babcock & Wilcox, Cuyama type, oil burners. Feed water regulators and desuperheaters were also supplied by Babcock & Wilcox Co. Diamond Power Specialty Co. soot blowers are installed.

There are two turbine driven electric generators, each of 35 kilowatts capacity for supplying electricity for all auxiliary purposes. These generators were supplied by the De Laval Steam Turbine Co.

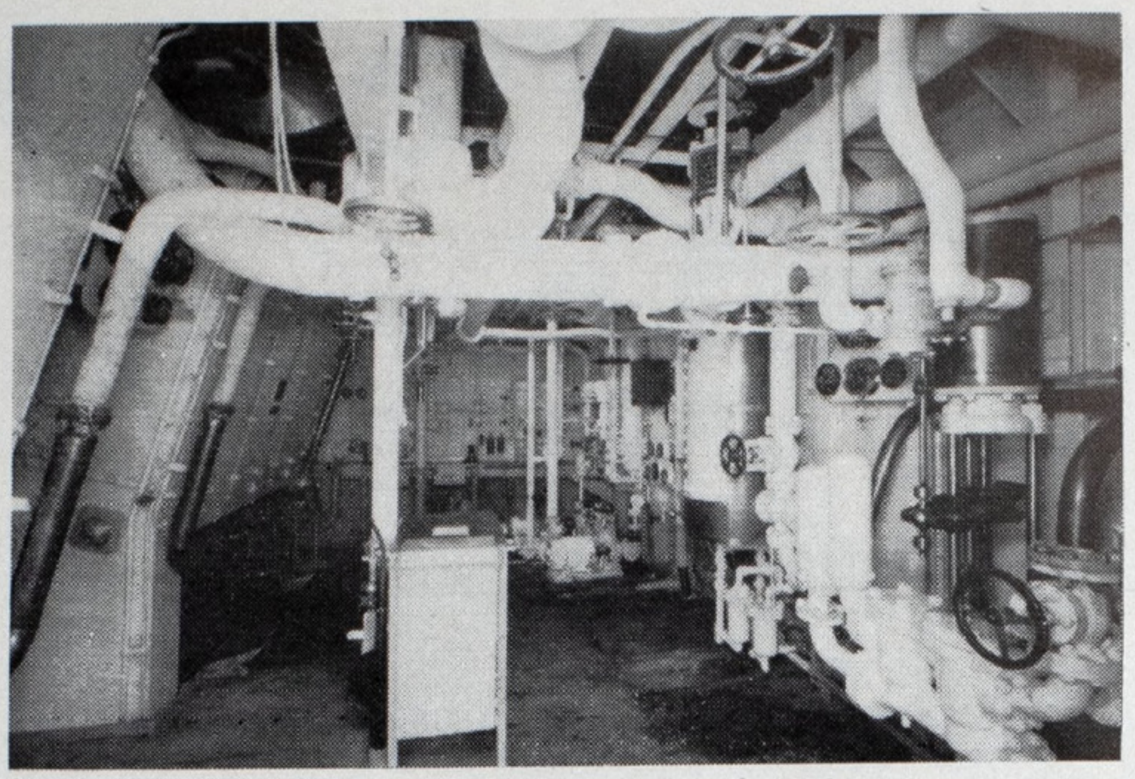
The feed pumps, two for each vessel, supplied by Warren Steam Pump Co., are vertical simplex double-acting, each having a capacity of 26,000 pounds per hour. All the other pumps were supplied by the De Laval Steam Turbine Co., and include one turbine driven propeller type main circulating; one centrifugal, electric motor driven, auxiliary circulating; two centrifugal electric motor driven, main condensate; one centrifugal, electric motor driven, auxiliary condensate; one centrifugal, turbine driven, fire pump; turbine and motor driven fuel oil pumps; two lubricating oil pumps; one centrifugal, electric motor driven, bilge pump; and one centrifugal, electric motor driven, sanitary pump; two 80-gallons per minute against 35 pounds pressure oil circulating pumps. The electric motor driven pumps are fitted generally with Star electric motors, connected by flexible couplings.



ENGINE room of the Onondaga. De Laval double reduction geared steam turbine developing 1500 S.H.P. at 140 R.P.M. of the propeller with steam at 300 pounds per square inch and 200 degrees Fahr. superheat. The Tahoma's machinery is identical



Onondaga, completed by the Defoe Boat and Motor Works, Sept. 11, 1934



BOILER room of the coast guard cutter Onondaga. Two Babcock & Wilcox marine water-tube boilers. Working pressure 310 pounds per square inch. Superheat 200 degrees Fahr. Three oil burners for each boiler

The three vessels, building at the Pusey & Jones Corp., the ALGONQUIN, COMANCHE and MOHAWK, are each fitted with a Westinghouse Electric & Mfg. Co. impulse type, double reduction geared turbine connected to a single propeller. This unit develops 1500 shaft horsepower at 140 revolutions per minute of the propeller when supplied with steam at 300 pounds per square inch pressure, 200 degrees Fahr. superheat and 27½ inches of vacuum. A hand valve also permits efficient operation at 500 shaft horsepower and 100 revolutions per minute of the propeller. The astern elements are designed for 1500 shaft horsepower at an increasing steam rate. The unit is self-contained in that the turbines, pinions and gears are supported by the gear case.

The condenser, which was also supplied by Westinghouse, is mounted transversely, and the exhaust trunks are bolted directly to the turbines without expansion joints. The propeller type circulating pump is built into the lower part of the inlet water chamber and its turbine drive is mounted on top of this chamber.

Each of these three vessels is fitted with two Foster-Wheeler marine water-tube boilers operating at a steam pressure of 310 pounds per square inch at the superheater outlets and with 200 degrees Fahr. superheat. The normal capacity of each boiler is 13,000 pounds per hour. Each boiler is fitted with three Todd oil burners. Diamond soot blowers are installed. Each boiler has a heating surface of 2450 square feet, or 4900 square feet for both boilers. The boiler tubes between headers have a length of 8 feet 11 inches, and the first horizontal row of tubes, directly above the furnace, are 4 inches in diameter ,and of 7 Birmingham wire gage thickness. All tubes above the first row are of 2-inch diameter and 12 B.w.g. thickness, except in the circulating tubes which are 4 inches. The boiler drum is 42 inches in diameter. The furnaces each have 265 cubic feet of combustion space. Each boiler is fitted with a desuperheater consisting of steel tubing placed in the boiler drum and with capacity for desuperheating 4000 pounds of steam per hour.

The weight of each boiler dry is 77,000 pounds and the weight of the water for each boiler is 10,000 pounds, which gives a total weight of 87,000 pounds per boiler in operating condition.

Pumps for these three vessels were furnished by Warren Steam Pump Co., M. T. Davidson, Westinghouse Electric & Mfg. Co., and Nash-Jennings. The Westinghouse Electric & Mfg. Co. also supplied two turbine driven generator sets, each of 35-kilowatt capacity.

General Equipment

Generally speaking, the remaining equipment not specifically referred to above, is the same for all of the five vessels and the equipment referred to from now on applies to all.

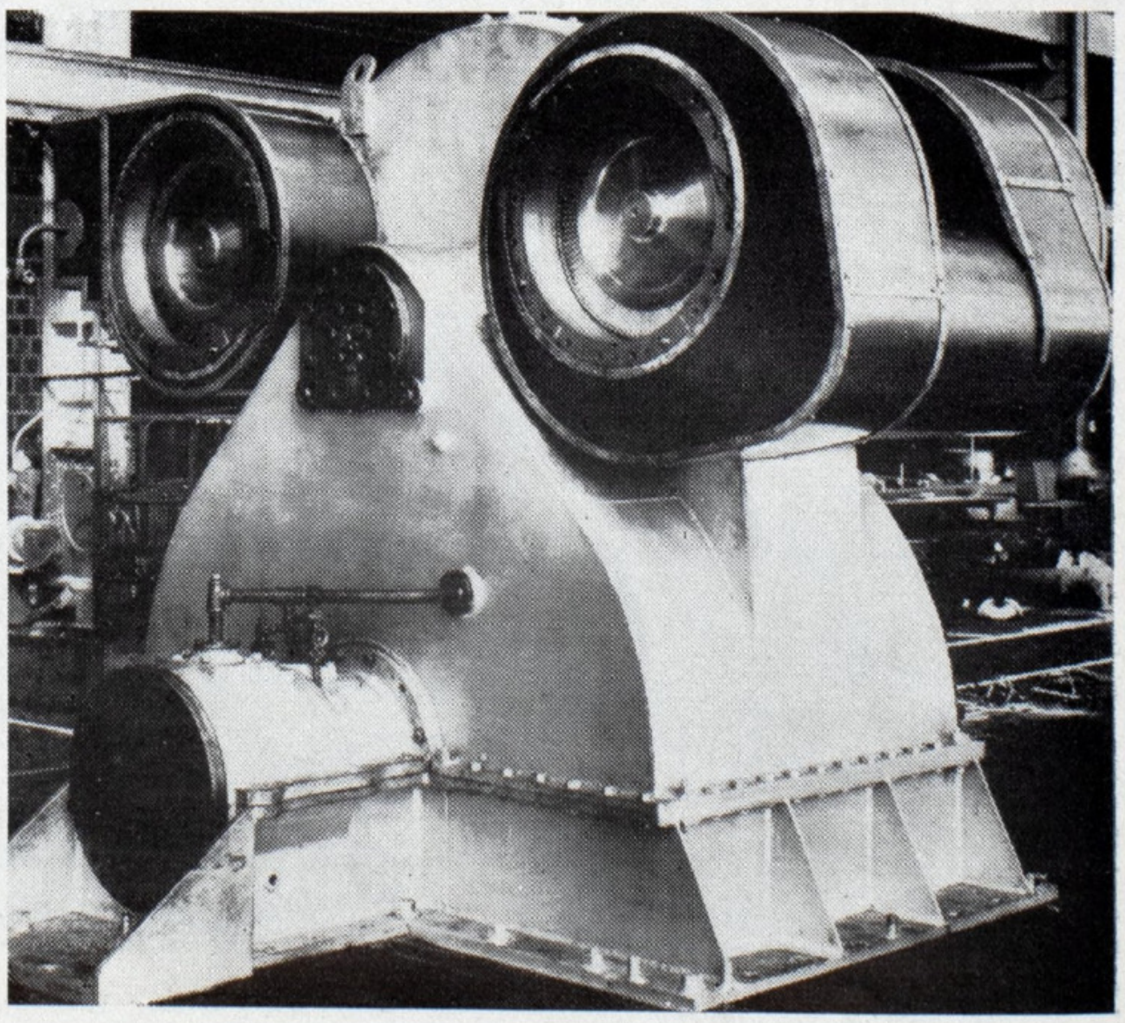
These vessels are fitted with an electric driven spur geared windlass, and an electric hydraulic steering gear with hydraulic pumps of Northern Pump Co. make. Both the windless and steering gears were supplied by the Lidgerwood Mfg. Co. Electric motors driving the windlass and steering gear were supplied by the Diehl Mfg. Co., and the controls by Cutler Hammer Mfg. Co. Each vessel was also supplied, by Lidgerwood, with a reversible steam gypsy with double 8¼ x 8 inches cylinders.

Propellers for all five cutters were supplied by F. Ferguson & Sons Co., who also supplied the propeller for the ESCANABA, which is a four-bladed solid manganese bronze wheel, 10 feet 6 inches in diameter and 10 feet 3 inches pitch.

Refrigeration for two hold storage boxes, one at a temperature of 26 degrees Fahr., and the other at a temperature of 38 degrees Fahr., is provided by two Kelvinator refrigerating units, which are fully automatic in maintaining the required temperatures.

On the ONONDAGA and TAHOMA the various additional equipment and materials were supplied as follows: Copper and brass pipe, Chase Brass & Copper Co.; pipe fittings and valves, Crane Co., and Scott Valve Mfg. Co.; safety valves, pressure gages, thermostats and pyrometers, and injectors, Consolidated Ashcroft Hancock Co.; cordage, Plymouth Rope Co.; magnetic compasses, John E. Hand & Sons Co.; gyrocompasses and searchlights, Sperry Gyroscope Co.; anchors and anchor chain, Baldt Anchor Chain & Forge Co.; propeller shafts, Titusville Forge Co.

It is understood that the Todd Shipbuilding & Dry Dock Co., Mobile, has been awarded a contract by the Waterman Steamship Corp. for reconditioning the steamer ANTINOUS. The amount involved is about $120,000. Geared turbine propelling machinery of General Electric make is to replace the original reciprocating engine. An increase in speed is anticipated from 10 to 13 knots. A good deal of new equipment will be installed including a contra rudder, and various engine room auxiliaries.



SHOP view of the Westinghouse Electric & Mfg. Co., double reduction geared, impulse type turbine used as main propelling power in the three coast guard cutters Algonquin, Comanche and Mohawk. Will develop 1500 S.H.P. at 140 R.P.M. at the propeller

Naval Architects to Meet In November

The Society of Naval Architects and Marine Engineers will hold its forty-second annual meeting at 29 West Thirty-ninth street, New York city, Nov. 15 and 16, and will close with a banquet on Friday evening, Nov. 16 at the Waldorf-Astoria hotel. A dinner dance will be held on the S. S. WASHINGTON on Saturday evening, Nov. 17.

The following papers are to be presented: *"Robert Fulton's Original Drawings,"* by F. D. Herbert; *"Ship Structural Design,"* by E. F. Spanner; *"The Determination of the Efficient Length for a Given Form and Speed,"* by L. A. Baier; *"Recent Developments in Propeller Design,"* by K. E. Schoenherr; *"The Measurement of Propeller Thrust on Shipboard,"* by H. E. Saunders; *"Development in Ground Tackle for Naval Ships,"* by E. S. Land; *"Ventilation of Ships,"* by J. E. Nichols; *"Some Examples of Arc Welded Ship Construction,"* by David Arnott; *"The Battle Cruiser,"* by H. E. Rossell; *"Marine and Naval Boilers,"* by C. A. Jones and T. A. Solberg; *"Bunker Fuel Oil Problems,"* by C. A. Jones; and *"Safety in the Design of Small Oil Tankers,"* by M. G. Kindlund.

A request of the members of the society is made to assist in obtaining new members and to seek the reinstatement of former members. The executive committee has waived the payment of entrance fees by the new members elected at the 1934 meeting.

The Clyde Mallory lines will maintain bi-weekly sailings to Miami Beach, Fla., on the liners MOHAWK and ALGONQUIN until Oct. 6, and will continue, beginning on Oct. 13, with the SHAWNEE, sailing from New York every Saturday.

Appoints Peacock Director Shipping Board Bureau

James Craig Peacock has been appointed director of the United States shipping board bureau of the department of commerce. The announcement of his appointment was made by Daniel C. Roper, secretary of commerce, on Aug. 25. While acting director of the shipping board bureau since May 1, 1934, he demonstrated his fitness and ability to serve as director, and his appointment is a promotion because of eminently satisfactory service.

Mr. Peacock is a native of Philadelphia, a graduate of Princeton and of the law school of the University of Pennsylvania. Prior to his appointment as a member of the advisory committee of the shipping board bureau on April 9 last, he had been engaged in the practice of law in Washington for 15 years. Since June 21 he has also been president of the Merchant Fleet Corp.

When Secretary Roper was commissioner of internal revenue, Mr. Peacock served as secretary successively of the excess profit advisors, tax reviewers, and the advisory tax board in the bureau of internal revenue. In 1914 and again in 1916 he was associated with the merchant marine and fisheries committee of the house of representatives as legislative draftsman. In that capacity he had an active share in drafting the shipping act of 1916 and also in the formulation of legislation for the insurance of cargoes and hulls by the war risk insurance bureau.

For about four years prior to that time he had been a member of the staff of the legislative drafting research fund of Columbia university, during which time he assisted several congressional committees and federal commissions.

James Craig Peacock
Director, Shipping Board Bureau

As director of the shipping board bureau, Mr. Peacock will be responsible for fostering measures to encourage the development of an efficient and adequate American merchant marine.

French Line Service

According to an announcement made by the General Steamship Corp. Ltd., San Francisco, Calif., the French line will maintain weekly sailings from the Pacific coast to Europe.

This new schedule will be so timed that the French line will make a sailing from San Francisco every Tuesday and from Los Angeles every Thursday. The vessels will, of course, also continue to serve Portland, Seattle and Vancouver. This will enable shippers and passengers to count on sailings with practically the same certainly as in the case of the French line's service out of New York.

Galveston Shipyard Plant Acquired by Todd

The Todd Shipyards Corp., New York, according to announcement made by John D. Reilly, president, has acquired the plant and equipment of the Galveston Dry Dock & Construction Co., Texas. Formal operation of the new subsidiary company, Galveston Dry Dock Inc., began on Sept. 1.

The plant, at the present time, has one 10,000-ton floating dry dock and one marine railway of sufficient capacity to handle vessels of 1500 tons. Plans are under way to increase the capacity of the plant, and another 10,000-ton floating dry dock and other equipment will soon be in service there.

The Todd corporation has had under consideration a ship repair plant in this locality, and a year ago planned to construct a yard in Houston. Due to unanticipated delays, it was decided to take over the Galveston property, which could be modernized in much shorter time and provide facilities in that port sooner than an entirely new plant could be completed at Houston.

The new plant is very accessible to the ship channels for the ports of Houston, Beaumont, Texas City, as well as Galveston. The addition of the Galveston yard gives the Todd Shipyards Corp. additional facilities in the Gulf as it already operates plants in Mobile and New Orleans. It also has a yard in Seattle, Wash., and operates three other modern ship repair plants in New York harbor.

Captain Lee Takes Charge

Capt. William H. Lee, who was recently appointed general superintendent of the International Mercantile Marine-Roosevelt Steamship Co., on the retirement of John Watson, began his nautical career on the training ship ENTERPRISE in 1904. In 1906 he shipped as quartermaster on the PERSIA of the Boston and Philadelphia Steamship Co., and a year later joined the U. S. S. HANNIBAL, then under command of Capt. A. B. Randall, commodore of the United States lines fleet, serving until 1922 on various ships of the navy.

From 1922 until 1926 Captain Lee commanded, in turn, the SAGAPORACK, ARTIGAS and COELLERA, ships of the J. H. Winchester & Co., operating to Liverpool, Manchester and Avonmouth. He then joined the staff of the Roosevelt Steamship Co., supervising the reconditioning of the present American Pioneer line vessels, operated by the company. He was given command early in 1926 of one of these vessels, the motorship SAWOKLA, then in the India and South American trade. Later that year he was made marine superintendent of the line, and held this post until his appointment May 1, 1933 as assistant general superintendent.

Late Decisions in Maritime Law

Legal Tips for Shipowners and Officers

Specially Compiled for Marine Review
By Harry Bowne Skillman
Attorney at Law

THE special circumstance of a tug leaving her ship did not excuse her from maneuvering with due regard to dangers of navigation and collision. MOUNT HOPE, 7 Fed. Supp. 80.

* * *

WHERE arrangement between the charterer of a vessel and a sugar company for loading was affected wholly within Cuban territory, the agreement was subject to Cuban law in force at the time; and where Cuban stevedores were employed by the sugar company to load the vessel, and the vessel was damaged by the falling of a hatch beam into the hold through the negligence of stevedores when removing the hatch beam, the charterer, under Cuban law, was liable to the vessel owner for resulting damages under charter obligation to return the vessel in good order and condition, reasonable wear and tear excepted, and the sugar company, as agent of the charterer, was exempt from liability to the vessel owner—RYGIA, 7 Fed. Supp. 85.

* * *

IN THE case of SWINBURNE, 7 Fed. Supp. 107, it was held that a steamship lying at anchor was not at fault for failure to pay out anchor chain when a dredge apparently out of control drifted down on the steamship, where collision occurred within a minute after the watch officer on the steamship saw the approaching dredge and heard its danger whistle, and paying out sufficient chain with safety to the steamship to avoid collision would have taken five minutes. Viewing the situation as it was suddenly presented to the watch officer, to hold him negligent in not ordering anchor chain to be paid out when he saw the imminent danger of collision, it must be found not only that what he did was wrong, but so poorly considered and plainly wrong, that a competent navigator if placed in his situation would not have done it and could and would have acted more effectively.

* * *

A CAUSE of action exists for failure on the part of a ship to use due diligence in attempting to save the life of a seaman who has fallen into the sea, it was affirmed in the case of Johnson v. United States, 7 Fed. Supp. 133. In this case the court held that a seaman who was washed overboard in stormy weather while proceeding across the well deck to the mess-room pursuant to summons was acting under the ship's discipline, and, in crossing the deck, did not assume risk of the ship's negligence in not having life lines rigged on deck. However, the court further decided that the seaman was contributorily negligent because he could have used a safe shaft tunnel instead of the deck to reach the messroom, and reduced the damages recovered for the seaman's death by one-half.

* * *

THE general maritime law in cases of injuries suffered by seamen was set out in the case of CRICKET, 71 Fed. (2) 61, as follows: That the vessel and her owners are liable, in case a seaman falls sick, or is wounded, in the ship's service, to the extent of his maintenance and cure, and to his wages, at least so long as the voyage is continued; that the vessel and her owner are, both by English and American law, liable to an indemnity for injuries received by seamen in consequence of the unseaworthiness of the ship, or a failure to supply and keep in order the proper appliances appurtenant to the ship; that all the members of the crew, except, perhaps, the master are, as between themselves, fellow servants, and hence seamen cannot recover for injuries sustained through the negligence of another member of the crew beyond the expense of his maintenance and cure; that the seaman is not allowed to recover an indemnity for the negligence of the master, or any member of the crew, but is entitled to maintenance and cure, whether the injuries were received by negligence or accident. "While it is the duty of the owner to use due diligence to see that the ship and its appliances are seaworthy," said the court, "he is not necessarily an insurer of safety, nor is the owner bound to furnish the best, safest, and most convenient structures. The life of a seaman is hard. The nature of his calling subjects him to many dangers. One of these is the hazards of a heavy sea. The sailor knows this and assumes the risk of his calling."

* * *

THE evidence in the case of Carlson v. United States, 71 F. (2) 116, developed that a seaman seeking to recover for personal injuries sustained the injuries when hatch covers on which he was walking fell precipitating him into the hold. It was not shown that any member of the crew had put the hatch covers in place or that they were in any way defective. The vessel was in port, and hence the covers might well have been placed by the stevedores in unloading the vessel. In holding that the seaman had failed to show negligence or want of care on the part of the vessel, the court said: "Hatch covers, when the separate boards are not all in ther proper places and securely battened down, are notoriously unsafe for walking. When some of them are off, those in place may be loose and easily fall when the weight of a man is put upon them. An experienced seaman is charged with knowledge of these conditions. It is his duty to use the safe means of passage provided for him."

* * *

A TRANSPORTATION company incorporated under the laws of one of our states, and the stock of which is owned by another domestic corporation, the stock of which is owned by a Canadian corporation, is not a citizen of the United States within the federal statute requiring transportation of merchandise between points in the United States in vessels owned by citizens of the United States, with certain exceptions; merchandise shipped on a vessel operated in coastwise trade between points within the United States, where the movement over part of the through route of a Canadian railroad began in Vermont and ended in New York, and did not move over the through route that was in part over Canadian rail lines and their own or other connecting water facilities, was subject to forfeiture. The above construction of the federal statute does not deprive the domestic corporation of property without due process of law.—Central Vermont Transportation Co. v. Durning, 71 F. (2) 273.

Marine Business Statistics Condensed

Record of Traffic at Principal American Ports for Past Year

New York

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1934	296	1,815,221	332	1,859,966
July	313	1,686,825	295	1,574,395
June	239	1,696,804	324	1,785,815
May	291	1,597,233	316	1,662,711
April	288	1,599,185	274	1,477,492
March	302	1,706,307	313	1,757,221
February	265	1,481,004	267	1,508,905
January	266	1,649,590	284	1,629,438
December	263	1,496,477	291	1,576,199
November, 1933	243	1,257,443	247	1,452,269

Philadelphia

(Including Chester, Wilmington and the whole Philadelphia port district)

(Exclusive of Domest.c)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1934	56	151,501	41	120,875
July	48	125,616	35	89,902
June	61	191,042	53	155,308
May	58	169,719	50	143,652
April	67	199,032	48	147,083
March	59	162,480	48	140,311
February	42	129,940	36	109,973
January	45	139,259	47	133,427
December	54	175,715	45	135,969
November, 1933	47	144,111	40	119,896

Boston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1934	129	377,219	106	363,789
July	136	374,494	112	392,586
June	125	337,627	105	316,594
May	105	301,785	82	245,571
April	86	309,725	58	227,404
March	88	304,604	64	259,406
February	71	247,077	46	162,542
January	97	330,320	60	225,075
December	84	303,806	52	236,871
November	90	323,540	62	230,969
October, 1933	96	335,488	60	210,010

Portland, Me.

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1934	23	31,559	21	31,672
July	14	27,034	12	26,525
June	15	30,296	16	43,232
May	15	27,376	15	32,378
April	14	20,555	15	20,572
March	13	33,399	13	33,399
February	11	27,213	11	27,213
January	9	22,908	10	25,570
December	13	31,801	13	32,589
November, 1933	15	29,335	18	35,579

Providence

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1934	7	12,240	5	11,809
July	4	11,634	4	17,821
June	8	14,773	4	4 887
May	3	4,985	1	2,022
April	3	4,985	1	2,022
March	5	17,973	2	7,422
February	7	20,959	2	6,882
January	2	7,694	....	.....
December	5	5,089	2	8,350
November, 1933	3	8,568	4	12,794

Portland, Oreg.

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1934	30	119,182	49	194,079
July	12	46,946	11	39,730
June	10	34,726	1	2,298
May	11	41,765	17	58,993
April	31	117,094	42	157,954
March	32	121,085	50	186,817
February	25	95,774	52	198,593
January	32	116,610	50	188,401
December	31	119,833	51	184,646
November	29	108,890	35	130,457
October, 1933	26	102,926	45	1.3 030

Baltimore

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1934	92	278,812	96	280,641
July	108	319,702	106	317,583
June	108	339,280	112	356,445
May	104	329,312	107	328,998
April	102	300,396	108	334,583
March	92	288,061	88	273,131
February	77	261,122	77	263,236
January	78	256,942	80	265,681
December	94	298,001	92	286,746
November	90	270,023	88	267,784
October, 1933	88	284,997	90	289,864

Norfolk and Newport News

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1934	21	111,553	37	113,616
July	25	76,320	33	91,111
June	39	91,293	57	127,068
May	31	71,706	50	103,737
April	21	65,701	47	125,291
March	23	64,469	60	151,360
February	16	47,708	41	102,933
January	22	68,930	41	112,922
December	17	57,307	42	119,186
November, 1933	19	55,692	49	115,584

Jacksonville

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1934	20	25,558	21	37,676
July	18	16,470	16	18,145
June	16	21,226	18	30,898
May	14	13,340	22	38,824
April	10	10,464	7	12,164
March	9	16,338	9	11,193
February	8	10,900	11	20,348
January	7	13,017	10	22,508
December	8	15,083	11	22,837
November, 1933	8	13,405	8	19,108

Key West

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1934	23	24,392	24	24,706
July	25	24,469	25	25,564
June	28	33,701	25	32,548
May	40	57,180	42	58,094
April	28	36,197	21	36,066
March	24	38,052	23	37,658
February	23	36,476	24	36,523
January	25	39,966	22	38,764
December	22	38,764	22	38,764
November, 1933	23	33,556	22	31,330

Mobile

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1934	108	256,663	101	237,852
July	102	221,011	99	225,308
June	119	254,040	115	237,054
May	115	255,503	114	253,294
April	113	254,839	103	239,371
March	115	275,629	129	309,123
February	115	268,707	112	251,232
January	118	282,972	125	298,570
December	123	279,151	109	253,209
November, 1933	114	260,755	114	249,344

Seattle

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
July, 1934	24	93,558	20	82,646
June	16	73,128	12	52,309
May	22	103,441	19	86,295
April	62	264,608	67	278,172
March	52	203,796	51	205,371
February	54	226,118	62	251,281
January	52	221,000	55	230,995
December	54	225,842	60	246,987
November	54	222,914	51	211,474
October, 1933	58	253,865	59	254,959

New Orleans

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1934	145	385,557	154	403,163
July	156	439,297	154	423,642
June	141	300,349	151	416,734
May	167	482,123	152	421,839
April	169	487,655	170	475,121
March	155	422,855	166	449,394
February	151	446,952	145	414,515
January	146	423,759	145	414,918
December	139	398,112	152	443,496
November	148	439,238	152	430,631
October, 1933	154	467,332	169	506,324

Charleston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1934	32	97,695	36	97,663
July	41	99,233	34	81,362
June	36	95,072	31	81,094
May	36	98,475	23	69,764
April	38	101,315	34	96,705
March	44	131,839	37	109,492
February	40	112,884	39	109,597
January	23	60,138	25	66,827
December	35	111,420	32	97,473
November, 1933	43	123,628	39	109,151

Galveston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1934	12	21,967	55	160,727
July	21	33,508	60	163,282
June	25	57,920	71	215,594
May	21	34,457	56	141,885
April	27	50,294	82	219,283
March	29	54,379	94	264,101
February	22	41,945	77	236,784
January	23	43,664	86	252,595
December	19	40,552	90	279,537
November	16	37,590	85	262,800
October, 1933	21	44,388	104	304,402

Los Angeles

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1934	218	801,482	201	785,671
July	198	710,210	186	755.686
June	201	743,198	186	738,880
May	200	754,695	197	738,307
April	186	696,716	167	679,883
March	168	669,548	169	691,230
February	154	629,859	165	624,170
January	176	686,201	146	616,189
December	169	639,444	164	629,462
November, 1933	143	539,624	162	592,724

San Francisco

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1934	160	699,105	178	781,553
July	118	484,655	119	471,702
June	126	386.966	110	456,027
May	152	452,827	140	593,715
April	165	831,501	169	729,273
March	150	659,251	181	772,219
February	141	503,105	154	659,366
January	163	722,800	197	764,823
December	137	616,820	172	739,604
November, 1933	144	619,874	182	806,020

Houston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1934	19	76,104	22	88,631
July	24	93 810	24	86,702
June	27	115,730	33	133,108
May	29	109,223	45	132,318
April	31	121,318	40	155,327
March	23	89,200	39	144,546
February	22	88,094	26	99,931
January	23	88.164	37	128,773
December	18	65,566	31	109,206
November, 1933	14	49,486	30	106,943

Note: At the port of Philadelphia, additional vessels in the foreign trade (via other American ports) were 79 of 254,980 net tons entered and 75 of 250,382 net tons cleared for the month of August.

Latest Data on New Marine Work

Information on New Ships Ordered—Building and Repair Contracts Let — Sales — Reconditioning — Launchings — Trial Trips

THE United States lines will begin building a new liner of the MANHATTAN-WASHINGTON type if the results of the mercantile marine conference to be held in Washington in October warrant such a course by making it clear that the government's policy toward the merchant marine is to be strengthened.

It is felt that the conference will result in a greater co-operation by the government. This will encourage shipping companies who are now somewhat uncertain as to the attitude of the government, particularly in connection with the mail contracts which are to be investigated by the postmaster general.

Tanker Trial Results

Trial trip of the POUGHKEEPSIE SOCONY, twin screw diesel tanker, recently completed by the United Drydocks Inc., for Socony Vacuum Oil Co., was held on the Hudson river, Aug. 29. The time upbound over the measured mile was 6 minutes flat and the time over the same distance downbound was 4½ minutes. Revolutions per minute of the two 375-brake horsepower each, McIntosh & Seymour six-cylinder diesel engines were 265.

The calculated speed from the results over the measured mile was 11.4 miles per hour.

To Build New Ferryboat

Public works administrator, Harold L. Ickes, has announced that the Erie Railroad Co. has been authorized to use $680,000, of its $11,282,000 allotment for equipment purchases, to build a new ferryboat for use between New York city and New Jersey.

C. F. Blackton, superintendent of floating equipment for the Erie railroad, stated when this announcement was made that for the time being nothing more could be added. Design details have not been settled. It had not been decided whether the vessel was to be 225 feet or 300 feet in lenth. The largest ferryboat now in the fleet of the company is 206 feet in length.

The Erie railroad has built no new vessels since 1930 when four large powerful diesel electric tugs, the CLEVELAND, ROCHESTER, OLEAN, and SCRANTON, were completed by the Pusey & Jones Corp., Wilmington, Del. These vessels are of the most modern construction and because of their great power were appropriately dubbed, "locomotives of the sea.' '

To Hold Hearings on Loan

Public hearings will be held at the offices of the shipping board bureau in Washington, on Oct. 2, in connection with the preliminary application of Angelo Conti New York, acting on behalf of the Atlantic Pacific Transport Corp., for a loan from the construction loan fund, to be used in building five refrigerator ships at an estimated cost of about $12,000,000.

The Atlantic Pacific Transport Corp. proposes to operate the ships between New York and San Francisco, via Guayaquil, Ecuador and on eastbound voyages from San Francisco, Los Angeles and San Pedro direct to New York.

This hearing is being held in accordance with the bureau's usual procedure in such cases and for the purpose of enabling it to ascertain the view of other interested carriers and of shippers and the general public, with respect to the pending application and the establishment of the proposed service.

The Cunard Superliner

The Cunard superliner No. 534 to be launched Sept. 26 at John Brown's shipyard, Clydebank, Scotland, and to be christened by Queen Mary is to be propelled by four sets of single reduction geared, high pressure, high temperature, steam turbines. Each set, it is estimated, will deliver 50,000 horsepower to its propeller.

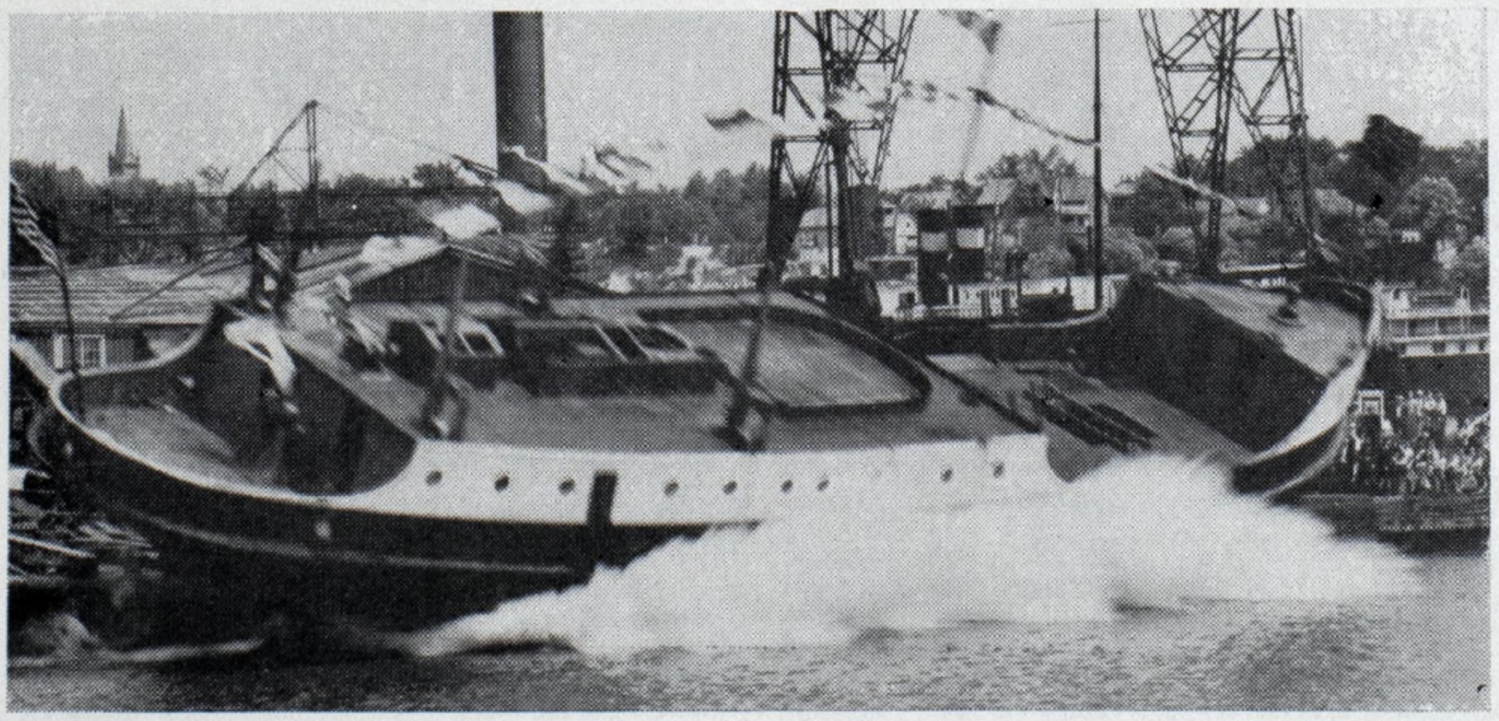
The lifesaving equipment of the new liner will consist of 28 all steel lifeboats. Each boat will weigh 16 tons fully loaded and will be propelled by a diesel engine. It is believed that this is the first time this type of engine has been used for power in a lifeboat. The lifeboats will accommodate 140 persons each, and will cost about $6000 each, fully equipped.

The whistle for the new vessel is to have a range of 10 miles but it will not disturb the passengers. A bass note has been chosen in preference to a high pitch. This choice was decided upon after experiments on the effect of high and low pitch on the nerves of listeners.

Launch Patrol Boat

Somewhat ahead of schedule, the CYANE, third and last of the three 165-foot, twin screw, diesel coast guard patrol boats, under construction by the Lake Union Dry Dock & Machine Works, Seattle, was launched Aug. 30. The sponsor was Miss Margaret Loomis David, daughter of Capt. George W. David, engineer officer of the Seattle division of the coast guard.

The ATALANTA, launched in June, underwent trials during September, and the entire contract will be completed before the end of the year. Lieut. Commander W. W. Kenner is in command of the ATALANTA, which is based at Seattle, Lieut. Commander A. M. Martinson is to command the ARIADNE, with headquarters at San Francisco.



Lighthouse tender Tamarack, launched on Aug. 21 at the Manitowoc Shipbuilding Corp., Manitowoc, Wis. Single screw, diesel electric drive

Fast Tankers, Freighters, Planned by Board

As is generally known, the shipping board bureau has for some time past been developing plans and specifications, under the supervision of an experienced naval architect, for a fleet of high speed tankers and also modern cargo ships. It has been reported that bids will be requested in due course. The contemplated tankers and freighters will have a speed, it is said, of 18 knots or more.

This would fall in line with the discussion some time ago about building extra fast tankers which could be used for naval service if needed. At that time the proposal was that the leading oil companies familiar with tanker construction would undertake such a program. Nothing came of it as the necessary arrangements could not be worked out for compensation to offset the extra cost over the usual commercial tanker. The present report would seem to indicate that the shipping board bureau is now considering not only the carrying out of this tanker building program but also the building of a number of fast freighters.

To Recondition Steamer

The Gulf Pacific Mail line will recondition the steamer REMUS which it recently bought from the shipping board bureau for $65,000. The work will be done on the Pacific coast, and will include increasing her speed to 13 knots and the installation of passenger accommodations.

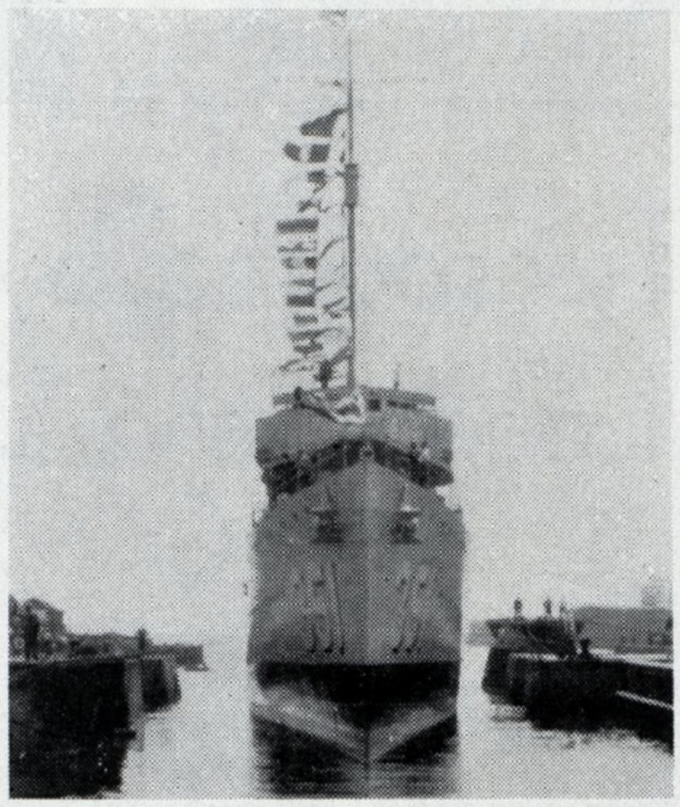
The REMUS is to be ready for operation this winter in the service of the company between the Pacific coast and Gulf ports. In this service she will join the POINT ANCHA and POINT LOBOS, and will be renamed the POINT JUDITH.

Launch U.S.S. Macdonough

The U. S. S. MACDONOUGH was launched at the Boston navy yard on Aug. 22, 1934 at 11:30 a.m. The vessel was christened by Miss Rose Shaler McDonough, granddaughter of Commodore Thomas Macdonough, for whom the ship was named.

The MACDONOUGH was built in dry dock No. 1 and hence the usual launching arrangements were greatly simplified. The dock was flooded early the morning of launching, and the caisson was removed. A launching platform was constructed at the head of the dock, and the vessel was hauled taut against a chock provided at the platform.

To simulate the ordinary ceremony, a line was run from the bow over a block on the platform to the dock head capstan. At the given signal Miss McDonough christened the ship with champagne and then cut the head line with a small broad axe; immediately the vessel was hauled aft and out of the dry dock.



Destroyer Macdonough launched at the Boston Navy Yard, Aug. 22

The MACDONOUGH is the fifth of the "348" (FARRAGUT) class to be launched. It is expected she will be placed in commission about March 1, 1935. Her dimensions are: Length on the waterline 334 feet 0 inches; breadth (extreme) 34 feet 2¾ inches; calibre of largest gun, 5 inches.

The National Malleable & Steel Castings Co., Cleveland, has received a contract from the navy department for cast steel anchor chain for three cruisers; total weight 170 tons.

Naval Building Program For Fiscal Year 1935

The general board of the navy, of which Rear Admiral Frank H. Clark is chairman, has prepared a naval building program for 1935 of 24 war vessels. This program is in line with the administration's decision to speed up building in order to arrive at London treaty strength in under-age vessels as soon as practicable.

The program for next year includes one 15,000-ton aircraft carrier to replace the LANGLEY; two 6 inch gun, 8000-ton cruisers to replace the OMAHA and MILWAUKEE; three heavy, 1850-ton destroyers; 12 light destroyers, each of 1500 tons; and six submarines.

The recommendations of the board are to be presented to the budget bureau. In view of the will of congress and the attitude of the President, no difficulty is anticipated in obtaining the approval of the bureau of the budget for the necessery expenditure. It is taken for granted that when bids are requested, one-half of the total number of vessels will be awarded to private shipyards and the remainder to navy yards, providing these establishments are then in the position to carry on with this additional program.

Diesel Engines for Ferry

On Sept. 15 no reconstruction contract had as yet been awarded in connection with the rebuilding and conversion of the ferry PERALTA to diesel drive. Some preliminary work was under way at Lake Washington shipyards, Seattle, in getting ready for the installation. The main propelling diessel engine of 3000 horsepower and a 600 horsepower diesel engine for auxiliary purposes for the ferryboat PERALTA have now been completed by the Busch-Sulzer Bros. Diesel Engine Co., St Louis.

The Puget Sound Navigation Co., owner of the vessel, expects soon to ask for bids on alterations, and installation of the new power plant.

Bunker Prices

At New York

	Coal F. o. b. per ton	Fuel oil alongside per barrel	Diesel engine oil alongside per gallon
Sept. 19, 1934	5.63@5.48	1.35	4.79
Aug. 18	5.63@5.48	1.35	4.79
July 19	5.63@5.48	1.35	4.79
June 19	5.63@5.48	1.35	4.79
May 18	5.63@5.48	1.35	4.79
April 19	5.63@5.48	1.35	4.79
Mar. 19	5.35@5.20	1.25	4.79
Feb. 19	5.35@5.20	1.25	4.79
Jan. 18	5.35@5.20	1.25	4.79
Dec. 18, 1933	5.35@5.20	1.25	4.79
Nov. 18	5.35@5.20	1.15	4.70½
Oct. 18	5.00@5.75	1.15	4.70½

At Philadelphia

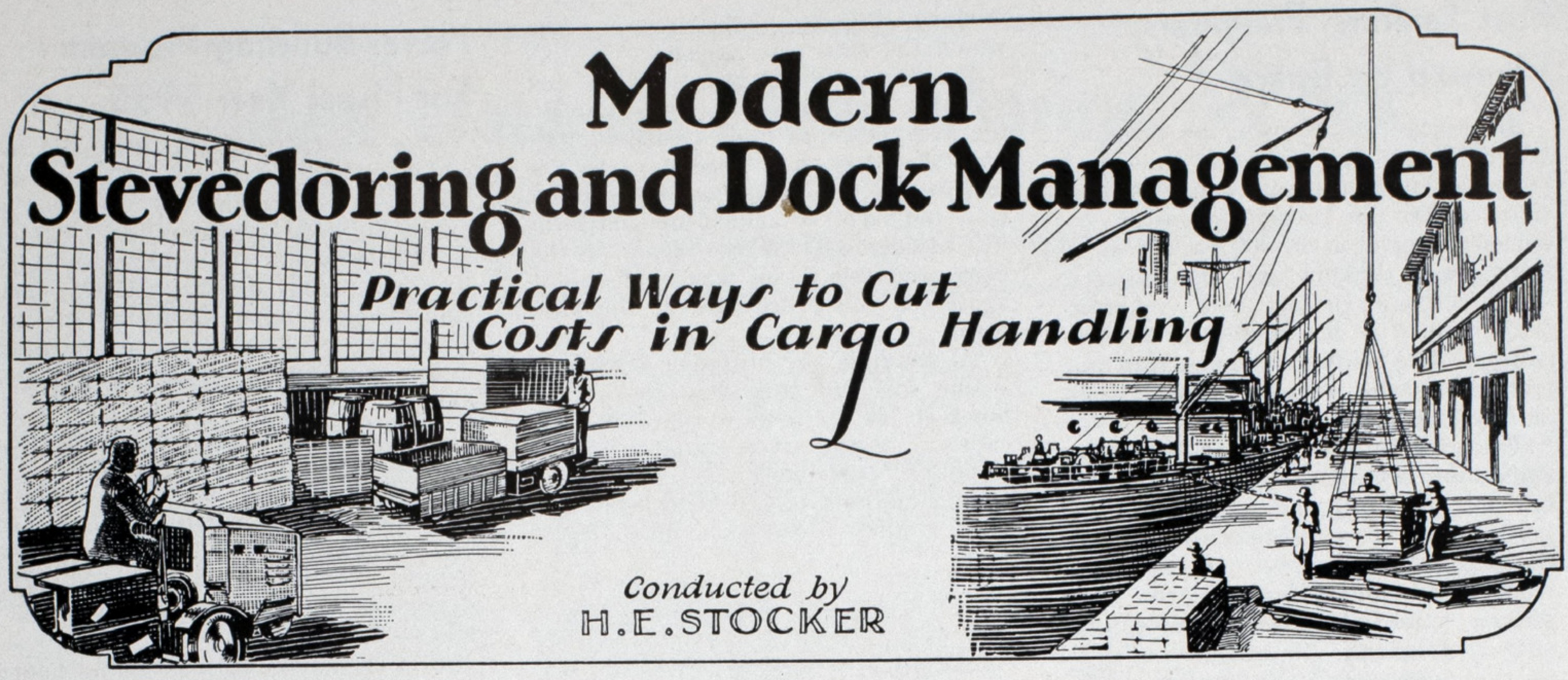
	Coal trim in bulk per ton	Fuel oil alongside per barrel	Diesel engine oil alongside per gallon
Sept. 19, 1934	4.93@4.78	1.35	4.76
Aug. 18	4.93@4.78	1.35	4.76
July 19	4.93@4.78	1.35	4.76
June 19	4.93@4.78	1.35	4.76
May 18	4.93@4.78	1.35	4.76
April 19	4.93@4.78	1.35	4.76
Mar. 19	4.65@4.50	1.25	4.76
Feb. 19	4.65@4.50	1.25	4.76
Jan. 18	4.65@4.50	1.25	4.76
Dec. 18, 1933	4.65@4.50	1.15	4.76
Nov. 18	4.65@4.50	1.15	4.76
Oct. 18	5.00@5.75	1.15	4.76

Other Ports

Sept. 19, 1934

Boston, coal, per ton	$8.00
Boston, oil, f. a. s. per barrel	$1.34½
Hampton Roads, coal, per ton, f.o.b. piers	$5.00
Cardiff, coal, per ton	13s 6d
London, coal, per ton	—s —d
Antwerp, coal, per ton	16s 6d
Antwerp, Fuel oil, per ton	—s —d
Antwerp, Diesel oil, per ton	—s —d
British ports, Fuel oil	—s —d
British ports, Diesel oil	—s —d

Note: Figures given for coal at New York and Philadelphia are for Classes A and B according to the Code; Class C is slightly less.



Automobiles Transported by Lake Vessels Quickly Loaded and Discharged

By H. E. Stocker

THE Nicholson Universal Steamship Co., operating on the Great Lakes, is the nearest approach to the ideal in obtaining quick turnaround of ships that the writer has seen recently. For example, the S. S. GRAHAM C. WOODRUFF loaded a full cargo of automobiles at Detroit in 2 hours and 23 minutes, and discharged at Buffalo in 3 hours and 11 minutes. When the writer traveled in the ship during August, she arrived at Detroit at 7:58 p. m. and sailed at 11 p. m. with 450 automobiles. Buffalo was reached at 10:10 p. m. the next night and the cargo was unloaded by 12:35 a. m., when the ship sailed for Detroit.

One ship on the Detroit-Cleveland trip loaded in 3 hours and discharged in 51 minutes.

The secret of this fast work is that the automobiles are run on and off the ship over special appliances, under their own power, and expensive time consuming handling and rehandling of numerous packages is avoided.

The cars are both driven and trucked to the terminal of the line at Detroit. At the entrance to the storage yards, the car are checked. The checker chalk marks each car's number on a window of the car and records the number in the yard record book. The shipping order, billing and yard book must agree, and before the cars are loaded on the steamer, they are again checked and the records are cross checked to make certain no errors have been made. The car is then driven to a point in the storage yard or into the two story warehouse which parallels the water's edge.

The Detroit terminal has a capacity of 1300 cars. When the ship is ready to load, the cars are driven on to the ship by expert drivers provided by the steamship company. All cars are driven on to the weather or spar deck which has been paved with asphalt to provide a good surface for the handling of the cars.

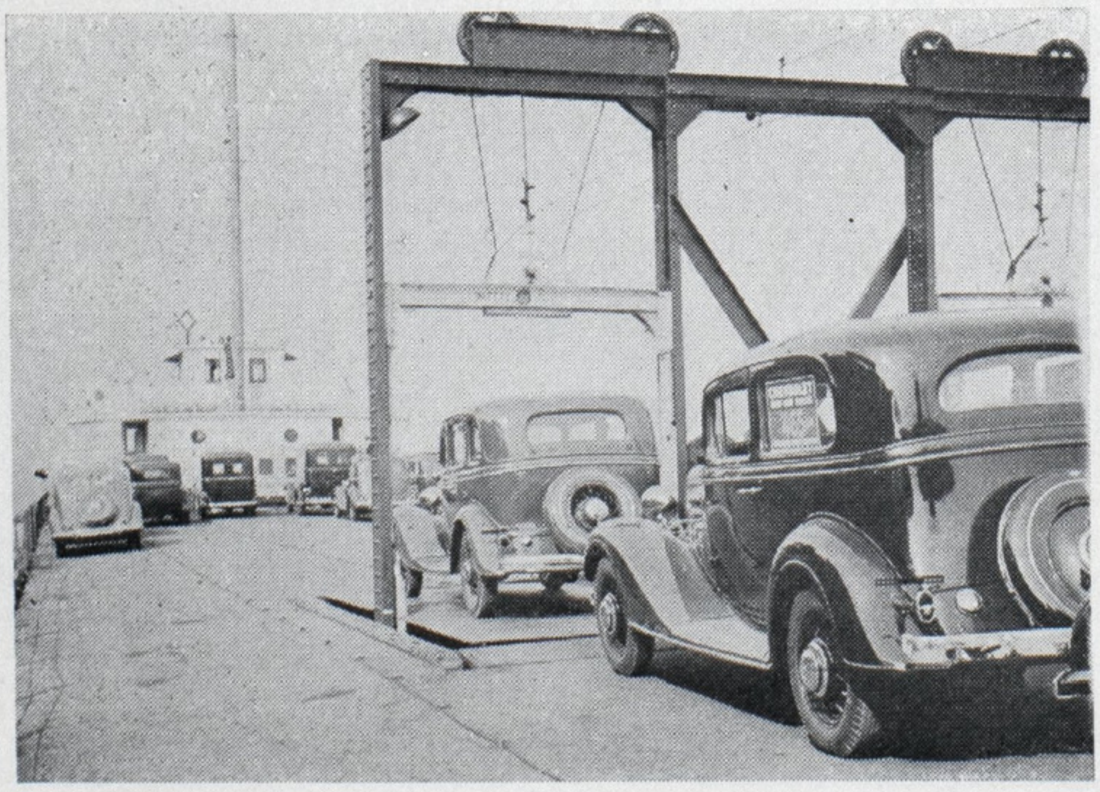
The cars are stowed in the lower hold, on the decks and on the spar deck.

The GRAHAM C. WOODRUFF, the largest ship of the line, carries approximately 500 cars, the actual amount depending on the size of the cars. When a full load is stowed, the clearance between the cars in many cases does not exceed three inches. The cars for below deck stowage are driven on to two steam winch operated elevators located amidship. The driver leaves the cars and walks back to the terminal for another car. The elevator is lowered to the hold or to whichever deck is being worked at the time. Another driver enters the car and it is driven to place of stowage with a speed which is surprising to a shipping man accustomed to the slow stowage of package freight.

Using two elevators, 175 cars may be loaded in an hour.

The cars below deck are held in place by their emergency brakes.

The cars on deck during bad weather, are secured by clamps which fit over the top of each tire and which are fastened by chains to steel fore



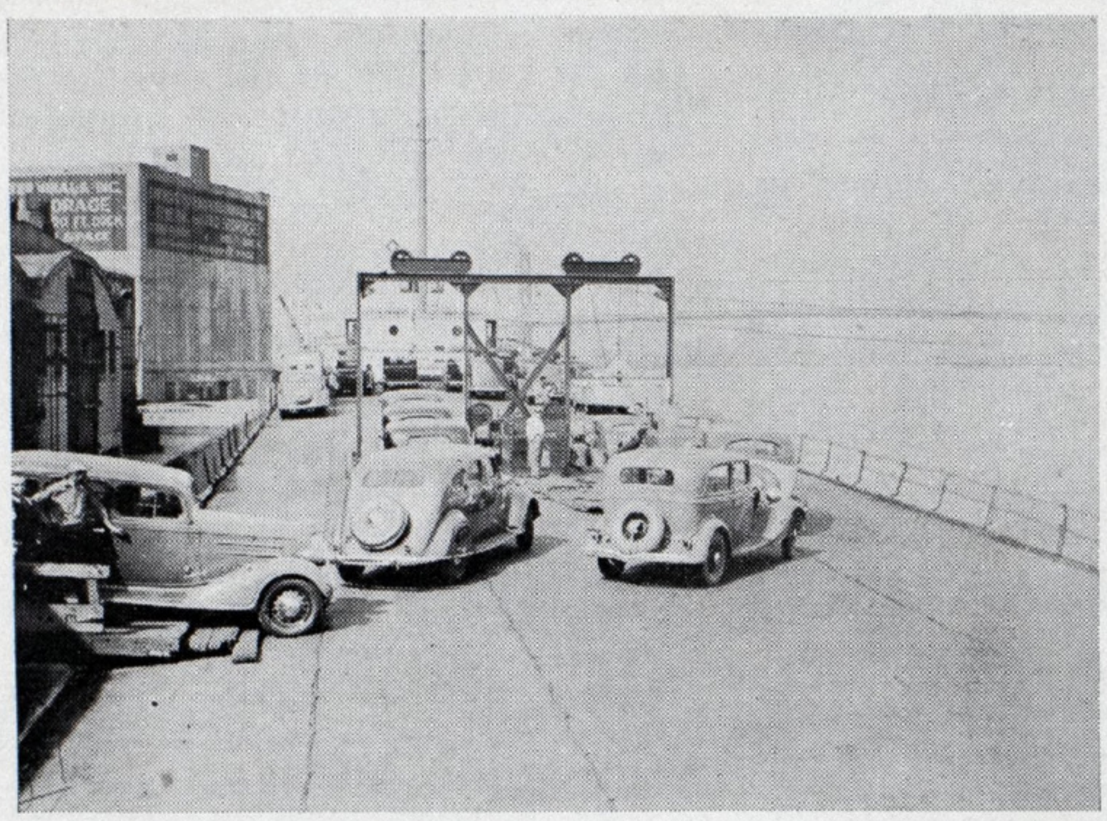
ELEVATORS for handling automobiles on the S. S. Graham C. Woodruff. Cables along the deck are used for securing the cars in bad weather

and aft cables permanently attached to the deck by "U" bolts.

When a full load of cars are carried, the elevator platforms are used for stowage. A safety device secures the platform in case of a breakdown preventing any fall to the lower hold.

When a ship docks, unloading starts immediately and continues at a rapid pace. On the trip when the writer arrived at Buffalo, the drivers were waiting at the edge of the dock ramp down which the automobiles are driven, and as soon as the GRAHAM C. WOODRUFF was alongside, they jumped on deck and proceeded to the cars. Within a few minutes the cars started coming off the ship in a continuous line.

SOME of the cargo of 450 automobiles on the S. S. Graham C. Woodruff from Detroit for Buffalo



CARS being driven onto the ship and directly on the two elevators which are used for lowering them to the hold and lower deck

At the foot of the ramp, a sorter checks the cars and indicates to the driver the section of the dock shed or storage yard to which he should proceed. At the same time, the sorter removes the radiator caps of cars which have removable caps. Although a watching service and insurance is provided, the company does not wish to take any chances of thieves taking the attractive caps provided on various models.

Rapid Turnaround Possible

The rapid turn around which is possible by having the cargo always on wheels and moving it under its own power, results in having the ships at sea about 89 per cent of their time on the Detroit-Buffalo run, 84 per cent in the Detroit-Cleveland run as compared with 28 per cent to 55 per cent in coastwise and intercoastal voyages. The Nicholson Universal ships' time in port compares favorably with that of tankers. In the February 1934 issue of the MARINE REVIEW, the summary of the log of tanker MERCURY SUN from March 5, 1932 to Oct. 14, 1933 shows 13 per cent of the time was spent in port.

On the Great Lakes it is necessary to perform 12 months work in 8 months and therefore it is necessary to operate a fleet of ships with a high degree of efficiency to be successful.

The Nicholson Universal fleet consists of the following eight ships:

Name	Length feet	Beam feet	Gross tons
GRAHAM C. WOODRUFF	460.0	52.2	5539
CORALIA	413.2	48.0	4349
CRESCENT CITY	406.0	48.2	4109
SONOMA	416.0	50.3	4539
SONORA	353.2	48.0	3630
SULTANA	353.2	50.3	3630
PENOBSCOT	454.0	44.5	3943
J. T. REID	320.0	42.0	2234

The Nicholson Universal Steamship line has a record of carrying thousands of cars each season with a minimum of damage. The organization is headed by F. L. Hewitt, president, assisted by P. G. Findlay, vice president and general manager, O. W. Benham, general operating manager, F. J. Parker, vice president of traffic, and T. H. Parker, traffic manager.

Proper Pier Construction Safeguard Against Fire

In an address, on waterfront fires, presented by John J. McElligott, fire chief and commissioner, fire department, city of New York, at the annual meeting of the American Association of Port Authorities Inc. at Albany, N. Y., Sept. 14, the following reference was made to the protection of piers and pier structures against fire:

During a period of 45 years, the recorded losses sustained to pier and pier structure fires show a percentage far out of proportion to the losses sustained to other classes of buildings. The reason for this, in my opinion, is that artchitects and pier designers have not applied the principles of fire-proofing, accessibility for the fire department, reducing large fire areas, installing automatic sprinklers and other first aid fire extinguishing appliances to pier construction in the same degree that these principles have been applied to the construction of other commercial buildings.

Large unbroken areas, through which a fire might sweep, still exist in the substructure and superstructure of our modern piers. A fire, if not immediately discovered and checked, on any of these piers will soon involve the entire pier, with the possibility of extending to other piers and vessels.

When in the construction of new piers it is necessary to build wooden decks on wooden piles, the architect or designer should keep in mind that when fires occur under piers they generally extend and become disastrous. The reason for these extensions is the inability of the fire department to reach the fire.

Fires In Substructure

The most difficult fires which the fire department has to contend with are those occurring under the pier or in the substructure. At some of these we know the exact location of the fire but, due to the many conditions, we are handicapped in reaching them and their extension cannot be prevented. Those conditions which prevent our reaching the fire are due to the style of subconstruction; the piles are so close to each other it is impossible to get beneath the piers in small boats or punts, and the longitudinal and cross-section beams are built so low that it is impossible to reach the fire at high tides. I have seen fire burning under piers at high tides that could not be reached but which were quickly extinguished when the tide receded.

(*Continued on Page* 40)

Morro Castle Burns at Sea Heavy Loss of Life

In one of the worst maritime diasters in recent years, 134 lives were lost when the S. S. MORRO CASTLE burned at sea off the New Jersey coast in the early morning of Sept. 8. Investigations were immediately begun and are still underway by the departments of commerce and justice. Final reports of these investigations must be awaited before all the facts are established.

On the evening of Sept. 7 at 7:45 p.m., Capt. Robert R. Wilmott, master of the MORRO CASTLE, died of acute indigestion and heart attack. Chief Officer William F. Warms took command.

Fire, discovered in a corner closet of the writing room on B deck, was reported at 2:55 a.m. Efforts to extinguish the fire were of no avail and aided by a high wind, it spread with great rapidity through the passenger accommodations and superstructure decks amidships. An S. O. S. was sent out at 3:25 a.m. The engine room had to be abandoned about 3:30 a.m. because of dense smoke.

Without power the ship drifted helplessly in the rough seas and the tide and wind carried her toward the shore. Eight of the twelve lifeboats were lowered. The wind sweeping the flames over the port side prevented access to boats on that side. The majority of passengers were unable to reach the lifeboats because of the fire. Many jumped into the esa and were picked up by the rescue ships. The MONARCH OF BERMUDA, CITY OF SAVANNAH, ANDREA LUCKENBACH, coast guard vessels and the fishing boat PARAMOUNT, all deserve the highest commendation for their effective efforts under particularly difficult conditions.

The burning vessel drifted toward the Jersey shore and finally grounded on the beach off Asbury Park. Captain Warms with 12 officers and men remained on board, having found refuge on the forecastle deck, until taken off by the coast guard cutter TAMPA, late in the afternoon.

Of the 318 passengers and 242 crew, the latest available records indicate that 94 passengers and 40 of the crew lost their lives.

Port Authorities Meet

The American Association of Port Authorities held its twenty-third annual convention at New York from Sept. 10 to 13, inclusive.

Among the addresses presented during the course of the convention was "The Navy and the Port of New York," by Read Admiral Yates Stirling Jr., commandant of the third naval district, which stressed the importance of the port of New York to the navy in case of war in the Atlantic, Pacific or Carribbean regions. He also urged the deepening of the entire East river channel to a 40-foot depth in order to establish improved anchorage facilities in the upper bay and in Gravesend bay to relieve unfavorable conditions of anchorage at Quarantine and the construction of a drydrock for the port of New York large enough to accommodate the greatest naval vessels and merchant ships.

Another speaker was Major General E. M. Markham, chief of engineers, United States army, who presented a paper on "Development of American Harbors."

Social activities continued throughout the week after the three-hour business sessions had been adjourned.

The North Attlantic Terminal Service Inc., operators of the government-owned piers at Hoboken, announced Aug. 26 that the board of directors have elected Max Thaten as president of the corporation to succeed Frank J. Denniston who resigned recently. Anthony Marra was appointed first vice president and Carl Thaten, second vice president.

Commerce at Los Angeles

August registered important increases in imports and exports through Los Angeles harbor over August of 1933. Exports during August, 1934, totaled $7,596,660 as compared with $4,279,601 for last year, an increase of 77½ per cent. Imports aggregated $4,213,740 as compared with $3,008,745 for August, 1933, an increase of 40 per cent. Foreign commerce through the port totaled $11,810,400 for August, 1934, compared with $7,288,346 for August, 1933.

Improved business conditions abroad and at home are clearly indicated by the upward trends in both exports and imports for the first eight months of 1934 as compared with like months of the preceding year. The total value of exports for the first eight months of 1934 was $52,286,547 as compared with $34,-268,300 for the first eight months of 1933, an increase of 52 per cent. In the same time period imports more than doubled, showing a total of $33,-810,720 for the first eight months of 1934, compared with $16,197,036 for that period in 1933.

The total foreign commerce through the harbor the first eight months of this year exceeds by $7,-000,000 the total for the whole year of 1933.

The Acheson Colloids Corp., Port Huron, Mich., has available for distribution technical bulletin No. M182, dealing with the use of colloidal-graphited lubricants in ball bearings.

Marine Insurance Report by Shipping Board

The shipping board bureau, department of commerce, completed its annual survey of marine insurance for the calendar year 1933, covering the operations of 69 American insurance companies, and 27 foreign companies admitted to do business in the United States.

A summary of the survey shows that premiums on both hull and cargo insurance received by domestic companies, less returns, was $36,878,000, and by admitted companies, less returns, $15,003,000. These premiums, less reinsurance placed in the United States, amounted to $24,493,000 (52 per cent hull; 48 per cent cargo) for domestic companies, as compared with $25,866,000 (58 per cent hull; 42 per cent cargo) for the calendar year 1932.

Premiums reported by admitted companies, less reinsurance placed in the United States, amounted to $7,-885,000 (52 per cent hull; 48 per cent cargo), as compared with $6,-646,000 (53 per cent hull; 47 per cent cargo) for 1932.

After further allowance for reinsurance placed with non-admitted foreign companies, the total net premiums retained within the United State amounted to $29,670,000, as compared with $28,910,000 in 1932.

The American marine insurance syndicate "C" reported premiums written, less returns, amounting to $6,615,218 for ocean hulls and $433,-340 for Great Lakes hulls.

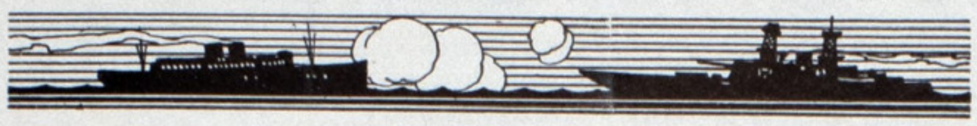
The government insurance fund, administered through the shipping board bureau, received hull premiums, less returns, amounting to $645,554 on privately owned vessels, and $589,575, less returns, on government-owned vessels, or a total of $1,235,129, which is $649,307 less than for the year 1932.

The Busch-Sulzer Bros. Diesel Engine Co., St Louis, has been awarded a contract by the United States Engineer office, Louisville, Ky., for building one 1600-horsepower diesel engine, for pump drive, under its alternate proposal, without coupling, for a sum of $53,300.

A summary of the various bids received for building this engine was published in the September issue of MARINE REVIEW.

Capt. E. P. Green, for 24 years with the Canadian Pacific fleet, has recently retired to sail for Hong Kong where he will supervise the building of his 45-foot auxiliary sailing ship, barkentine-rigged, in which he expects to cross the Pacific from Hong Kong to Vancouver next spring. The little craft has been christened ROMANCE.

Useful Hints on Cargo Handling



THE Central Railroad of New Jersey has a bulk cement handling plant at Jersey City, N. J. The cement arrives from the mill in gondola cars fitted with roofs. The handling plant consists of a weather-tight car shed in which a hopper is located under the track with two screw conveyors extended to a height of 45 feet above the deck of the dock and an inclined delivery chute from the top of the elevators to the barges.

The delivery chute is adjustable so that the cement boats may be loaded at any stage of the tide. The conveyors are weather and dust tight. The capacity of the plant is 200 tons per hour. The truck for cement cars has a storage capacity of 18 loaded cars which are moved to the hopper by means of an electric winch.

Grab for Hoisting Paper

A CLEVERLY designed grab is used for hoisting rolls of newsprint paper in a vertical position. The grab consists of a pipe-like section which is split so that when the hoisting starts, a tapered piece of material is pulled against the sides of the pipe-like section, spreading it against the sides of the core of the roll of paper. Before the grab is placed in the core, a lever is placed in a horizontal position to permit easy insertion of the grab.

After the hoist is completed, the lever automatically releases the pressure against the core permitting the grab to be withdrawn.

A different conception is needed of organization expense in some companies. It is profitable to increase an organization in a period of depression by employing a cargo handling executive because for every dollar expended for salary and expenses, two or more dollars will be received.

Load Batteries on Skids

THE vessels of the Detroit & Cleveland Navigation Co. carry batteries on skids from the Cleveland terminal to automobile plants at Detroit. The skids have three trays so that a good sized load may be carried without piling the batteries. The loaded skids are taken from alongside the railroad car which brings the skids from the factory, by electric lift trucks.

The trucks go on the deck of the boat through a side port and drop the skids. At destination, this operation is reversed. The loaded skids are placed on motor trucks of the Detroit & Cleveland line for forwarding to the automobile plants, where the batteries are unloaded from the skids.

THIS page is being devoted to short items on all matters having to do with the more efficient turn-around of ships. These items are intended to be of a helpful nature.

We will welcome for this page brief descriptions, illustrated if possible, of any better or safer way of performing any function in cargo handling. Also, any questions submitted will be answered by the editor.

Canned pineapple in fiber cartons should not be used to chock off large cases of machinery, automobiles, etc.

Quick Loading Method

THE fork truck pallet method of freight handling has many possibilities for economical handling of cargo. A notable advantage of this method is the ease with which cargo may be piled on a terminal. Loaded pallets may be piled two and three high quickly and with the minimum of expense. The speedy loading of trailers by loading a pallet load at a time instead of a case at a time is another distinct advantage.

Safe Hatch Covers

SOME well known lines are very negligent in maintaining hatch covers in a safe condition. The hatch boards are worn and broken so that spaces exist between covers. Men step into these spaces and are injured. Recently, a longshoreman stepped on a cover which was too short. His weight caused one end to slip from the strongback and he plunged into the hold and was severely injured.

The cost of this accident would have provided many covers in first class condition and would have prevented human misery. In this case it is apparent that not only human considerations but also the economic returns pointed to the wisdom of making the necessary outlay to make certain of safety.

When handling barrels of Fixite which weigh as much as 1000 pounds a barrel, tractors have proved much more effective than man power. They are used to push the barrels along the pier or up a gangway into a sideport. Also tractors have proved more effective in moving the heavy barrels over a rough pier deck.

Improvised Equipment

WHEN lift trucks are not available for handling skidded paper, a stevedore has used shovels for this work. The type used generally for handling coal or any other shovel with a large angle between the handle and the shovel proper may be used. Two shovels are put under the front legs and a rope is placed around the entire skid. Then a tractor is attached to the rope and the skid pulled to destination on the pier or into the sideport of a ship.

When handling plyboard cases with case hooks, it has been found that there is less liability of damage to the case when the hooks are placed on opposite sides of the cases than when placed at the corners.

On Using a Lift Truck

CASES or crates of machinery are constructed usually with two runners on each side so that they may be rolled on pipe rollers or pulled along the deck of a pier. The handling of this type of cargo is facilitated by "pinching" them up, placing blocking under the runners and running a lift truck under the case or crate so that they may be moved on wheels rather than dragged along to the detriment of the effectiveness of the operation and the life of the pier deck.

By getting shippers to construct cases and crates with runners of sufficient height for a lift truck, considerable time and expense would be saved.

Adequate lighting of offices improves efficiency. Putting a stenographer at a typing job where lighting is of too low intensity reduces the amount of work turned out and tends to increase errors

Up and Down the Great Lakes

Decrease in Traffic—Lake Levels—Ore Shipments—Canadian and American Grain—Coal—Fewer Vessels in Operation

THE shipment of iron ore through the Sault Ste. Marie canals, United States and Canadian, during the month of August was 4,316,053 tons. This compares with 5,277,137 tons of iron ore shipped during the month of August, 1933, and 4,705,363 tons of iron ore shipped during July, 1934. Wheat was lighter than in August, 1933 by 680,349 bushels. Other grains, however, increased by 799,430 bushels. So also did bituminous coal by 347,414 tons. Total traffic through the canals during August was 6,989,719 tons which was 701,144 tons under last year's traffic for the corresponding month.

Total traffic through the Welland ship canal during August amounted to 1,272,951 tons as compared to 1,211,652 tons during August, 1933. Increases were shown as follows: Bituminous coal, 56,828 tons; coke, 30,599 tons; iron ore, 65,963 tons; pulpwood, 22,053 tons; gasoline, 17,831 tons; and barley, 33,363 tons. Wheat was lighter than last year by 65,700 tons or 2,190,000 bushels; flour by 13,019 tons; cement, brick and lime by 27,618 tons; and iron ore, pig and bloom by 10,450 tons.

Principally due to light wheat shipments the total freight through the St. Lawrence canals during August dropped to 866,256 tons as compared with 979,522 tons during August, 1933. Decreases were as follows: Wheat, 144,645 tons, or 4,821,500 bushels; sand by 45,856 tons; iron ore by 15,514 tons; flour by 12,924 tons; flaxseed, by 8134 tons; anthracite coal by 7732 tons; and paper, by 6799 tons. The larger increases included 57,900 tons of bituminous coal; 21,746 tons of barley; 10,592 tons of other ore (other than copper and iron); 10,653 tons of petroleum and other oils; 7793 tons of sugar; and 8044 tons of oats.

Ore Shipments Decrease

Ore shipments from upper lake ports during the month of August showed a decrease of 18.41 per cent from the amount shipped during August, 1933. A total of 4,161,686 tons of ore was shipped from upper lake ports during August this year as compared with 5,100,702 tons in the month of August, 1933. The total shipment of ore for the season up to Sept. 1, 1934 was 15,685,211 tons as compared with 10,795,398 tons for the season of 1933 up to Sept. 1.

The decrease in ore shipments during August of this year from the same month last year amounted to 939,016 tons, or 18.41 per cent. The increase in ore shipments for the present season up to Sept. 1, over the same period of 1933, amounted to 4,889,813 tons or 45.3 per cent.

Shipments of ore by rail from Lake Erie ports to furnaces during the month of August amounted to 1,947,921 tons, making a total for the season up to Sept. 1 of 8,280,458 tons as compared with a total shipment of 6,069,779 tons for the same period in 1933. On Sept. 1, 1934 the balance of ore on dock at Lake Erie ports was 4,855,814 tons as compared with 4,895,524 tons on Sept. 1, 1933.

August Lake Levels

The United States Lake survey reports the following monthly mean stages of the Great Lakes for the month of August, 1934, determined from daily readings of staff gages.

Lakes	Feet above mean sea level
Superior	602.78
Michigan-Huron	577.98
St. Clair	573.40
Erie	570.30
Ontario	243.63

Lake Superior was 0.04-foot lower than in July, and it was 0.08-foot below the August stage of a year ago.

Lakes Michigan-Huron were 0.08-foot lower than in July, and they were 0.56-foot below the August stage of a year ago, 1.62 feet below the average stage of August of the last ten years.

Lake Erie was 0.08-foot lower than in July, and it was 1.18 feet below the August stage of a year ago, 1.74 feet below the average stage of August of the last ten years.

Lake Ontario was 0.50-foot lower than in July, and it was 1.14 feet below the August stage of a year ago, 2.27 feet below the average stage of August of the last ten years.

Shipyard Annual Report

W. H. Gerhauser, president of the American Ship Building Co., Cleveland, in his annual report, Sept. 10, for the fiscal year ended June 30, stated that the gross business during that period was substantially greater than in the previous year, although still far below normal. The repair business was about 60 per cent of the average for the past ten years and less than 50 per cent of the pre-depression average. During the period two bulk freighters were converted to self-unloaders. These contracts, together with the repair business made it possible for the company to earn a profit of $207,134.83 on the year's operations.

It was pointed out by Mr. Gerhauser that the volume of repair business secured by the company corresponds closely with the restricted operations of the bulk lake fleet. He further points out that an average of approximately 50 per cent of the available vessel tonnage was in operation during the summers of 1933 and 1934, also, that no new merchant vessels have been built on the Great Lakes during the year and that there is no present prospect for new ship construction.

Less Tonnage in Service

Of the 328 American lake ore vessels of 2,748,800 tons trip capacity listed in a tabulation compiled by C. C. Lindeman of the M. A. Hanna Co., Cleveland, only 153, of a total trip capacity of 1,376,400 tons were in commission on Sept. 15. This represents 50.07 per cent of the capacity and 46.65 per cent of the number. Of the number in commission 115 vessels were engaged in the ore trade and 38 were engaged in other bulk trades such as coal and grain.

The comparable standing of vessels of this fleet in commission on Aug. 15 last was as follows: 180 vessels of 1,628,000 tons capacity of which 134 were engaged in the ore trade. This represented 59.23 per cent of the total capacity and 54.88 per cent of the number of the 328 vessels considered.

The current figures of vessels in commission are very considerably below the standing as of Sept. 15, 1933, when, out of 330 vessels listed of 2,763,000 tons trip capacity, no less than 217 were in commission, of which 199 were engaged in the ore trade. This represented 68.44 per cent of the total trip capacity and 65.76 per cent of the total number of vessels in the fleet.

Coal Shipments Greater Than Last Year

Bituminous coal shipments via lake vessels from Lake Erie ports from the beginning of the season up to 7 a.m., Sept. 17 amounted to 24,521,194 net tons of cargo and 796,551 net tons of bunkers giving a total of 25,317,745 net tons. This is an increase of something over three and a quarter million tons over the same period last year and it is over ten and a half million tons more than the movement for the same period of 1932 and is also about three and a half million tons more than the movement for the same period of 1931. The figures used were compiled by the Ore & Coal Exchange, Cleveland.

In the same period during 1933 the cargo coal moved amounted to 21,399,481 tons and the bunker coal, 647,190 tons, making a total of 22,046,671 net tons. In the comparable period of 1932, cargo, bunkers, and total bituminous coal shipments were, respectively, 14,419,704 tons, 356,025 tons, and 14,775,729 net tons. For the same period in 1931, the figures for bituminous coal shipments in cargo, bunkers, and total were, respectively, 21,123,207 tons, 697,730 tons and 21,820,937 net tons.

Average shipments of bituminous coal each week for the four weeks ending 7 a.m. Sept. 17 amounted to 1,053,347 net tons of cargo, and 38,538 tons of bunker. This is a decrease from the average weekly shipments for the four preceding weeks of 114,196 tons of cargo.

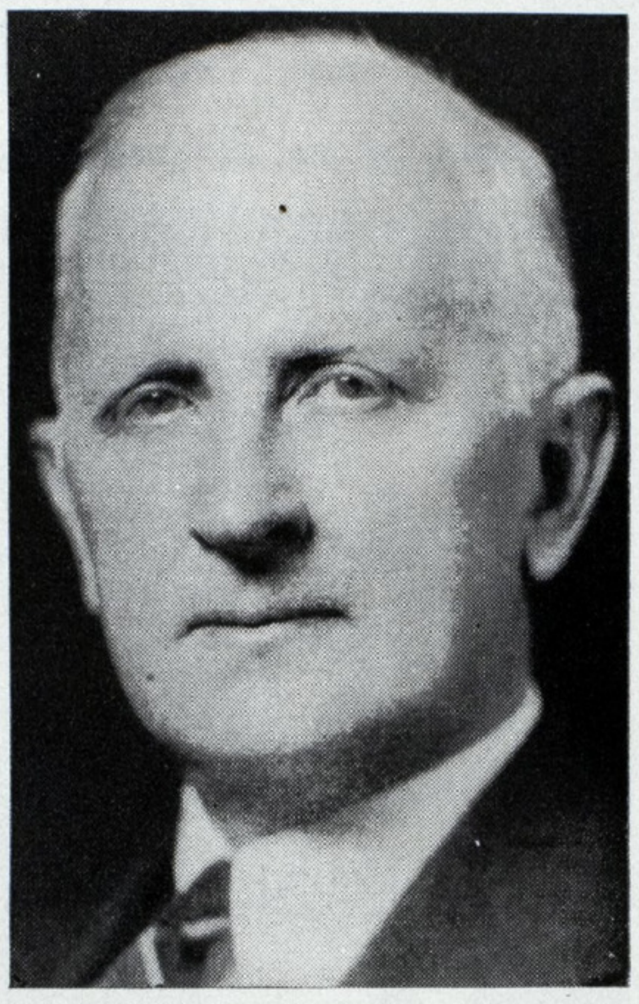
Horatio N. Herriman Dies

Horatio N. Herriman, vice president and Great Lakes manager of the American Bureau of Shipping, died at Charity hospital, Cleveland, Sept. 18, after a short illness. His character and personal qualities had endeared him to all classes of men engaged in shipping and shipbuilding and to his colleagues in the bureau. He was also held in the highest respect for his professional attainments. Perhaps no other individual possessed so comprehensive a knowledge of the technical features of the design and construction of lake vessels. In the early years at the beginning of his career, he had the good fortune to be associated with W. I. Babcock and John A. Ubsdell, men of exceptional talent in marine engineering and naval architecture.

He was the naval architect in the comparatively recent conversion of five large Great Lakes bulk carriers to self-unloading vessels, the last of which, the CONSUMERS POWER, was completed in June. All of these vessels have been remarkably successful in service. Many other successful vessels, now sailing the Great Lakes were built to his designs and under his supervision.

He had a fine heritage of American sea tradition. His father, Capt. F. D. Herriman, was one of the famous old American clipper ship masters. He also had a unique and cosmopolitan training in his early youth. Born in 1875 at Liverpool, England, during the sojourn there of his family, where his father was in charge of a dry dock, he was educated in England and France.

At the age of about 18, he returned to the land of his forefathers and after serving for a time as draftsman in a Great Lakes shipyard, and a brief business career in Chicago, he became associated with his father in the Great Lakes Register which the latter had founded in 1896.



The Great Lakes Register continued as an independent bureau, for the listing and classification of vessels on the Great Lakes, until 1916 when it was consolidated with the American Bureau of Shipping, Mr. Herriman being made a vice president and manager for the Great Lakes. He was chairman of the committee, appointed by the United States shipping board during the War, for supervising the reconstruction of vessels for war service. He was a member of the Society of Naval Architects and Marine Engineers.

One of his avocations was amateur theatricals and he possessed marked talents as an actor and singer. He was a charter member of the Hermit club and took a leading part in its annual shows, both as author and actor. He was known for his good fellowship, a devoted friend, a true gentleman.

Mr. Herriman lived in Cleveland and is survived by his wife and a son, H. N. Herriman Jr., 21.

Canadian and American Lake Grain Shipments

From Aug. 15 to Sept. 14 inclusive, shipments of grain from Fort William and Port Arthur, Ont., via lake vessels were as follows: Wheat to Canadian lower lake ports, 8,551,566 bushels; to Montreal, 1,317,735 bushels; to other Canadian ports, 27,185 bushels; to Buffalo, 6,947,280 bushels; and to other United States ports, 2,025,978 bushels. This makes a total of 18,869,672 bushels of wheat shipped via lake vessels from Fort William and Port Arthur, from Aug. 15 to Sept. 14.

During the same period oats moved from the same ports in the following quantities: to Canadian lower lake ports, 1,008,592 bushels; to Montreal, 118,643 bushels; to other Canadian ports, 118,014 bushels; and to United States ports, other than Buffalo, 326,646 bushels. The movement of barley was as follows: to Canadian lower lake ports, 240,575 bushels; to Montreal, 239,830 bushels; and to United States ports, other than Buffalo, 1,270,697 bushels. The only rye moved was 248,926 bushels to United States ports, other than Buffalo. During the same period screenings moved in following quantities: 2043 tons to Canadian lower lake ports, 1852 tons to Buffalo and 612 tons to other United States ports.

The grand total in all kinds of grain shipped via lake vessels from Fort William and Port Arthur, Aug. 15 to Sept. 14, both inclusive, was 22,441,595 bushels and 4507 tons of screenings.

Shipments from American Ports

August grain shipments by lake from Chicago totaled 7,526,000 bushels of wheat, corn and oats, compared with 4,499,000 for August, 1933. The total movement of grain from Chicago by lake since the opening of navigation to Sept. 15 amounted to 28,069,000 bushels. Shipments were headed by corn with 18,864,000 bushels, with 8,021,000 bushels of wheat also moved.

Grain shipments from Duluth to Aug. 31 were smaller than during the corresponding period of last year. The water movement to Aug. 31, 1934 was 26,423,934 bushels against 32,748.418 bushels in the corresponding period of 1933. The biggest decrease was shown in wheat, movement of this grain dropping from 18,928,479 bushels to 11,360,149. Shipments of corn and barley showed little change while the movement of oats this year was more than double that of a year ago.

Anthracite coal shipments on the lakes for the season up to Sept. 1 amounted to 443,685 long tons, while for the same period in 1933 the amount was 236,188 long tons.

All Steel Construction Is Proposed for Ships

According to a statement issued on Sept. 15 by Edward G. Budd, president of the Edward G. Budd Mfg. Co., Philadelphia, there is no question about the eventual economy in building all-steel fireproof ships.

"President Roosevelt's recommendation to the effect that American passenger ships of the future should be of all-steel construction and that the present interiors be replaced by steel partitions is timely and practicable.

"Rear Admiral George Henry Rock, U. S. N. (retired) is also to be commended for emphasizing that the public is partly responsible for such disasters as that which destroyed the MORRO CASTLE because of its supposed preference for ships tricked out with paneled walls and decorative hangings. As he says, it is up to the public to act, and to insist upon fireproof ships."

Mr. Budd goes on to say that due to the pressure of immediate need for economy, partitions, paneling doors, etc., of ships have been built of inflammable material. "However, it is practicable and eventually economical to construct them of light weight stainless steel timber. Partitions made of this material are strong, light, economical and firesafe. The cost of their maintenance is much less than that for combustible materials. Their use should have the effect of reducing marine fire insurance rates materially. So, in the end fire-proof construction would not only be humane in shipbuilding, but would result in actual savings to shipowners.

"I firmly believe that not only the ships of the future, but many of those now in use will be converted to all steel and thus afford greater safety. This will be another of the many advances in the arts which will for years to come keep all the American people busy serving their neighbors and earning a living for themselves."

Italian Line Sailings

Italian line vessels continue to show large bookings on both eastbound and westbound sailings.

The ROMA arrived in New York on Aug. 22 from Italy, the Riviera, Spain and Mediterranean ports with 1017 passengers, 375 returning from a Mediterranean cruise while the remainder were from Italy, the Riviera, and Gibraltar. She sailed from New York on Aug. 24 for Gibraltar, Nice, Genoa, Naples and Haifa.

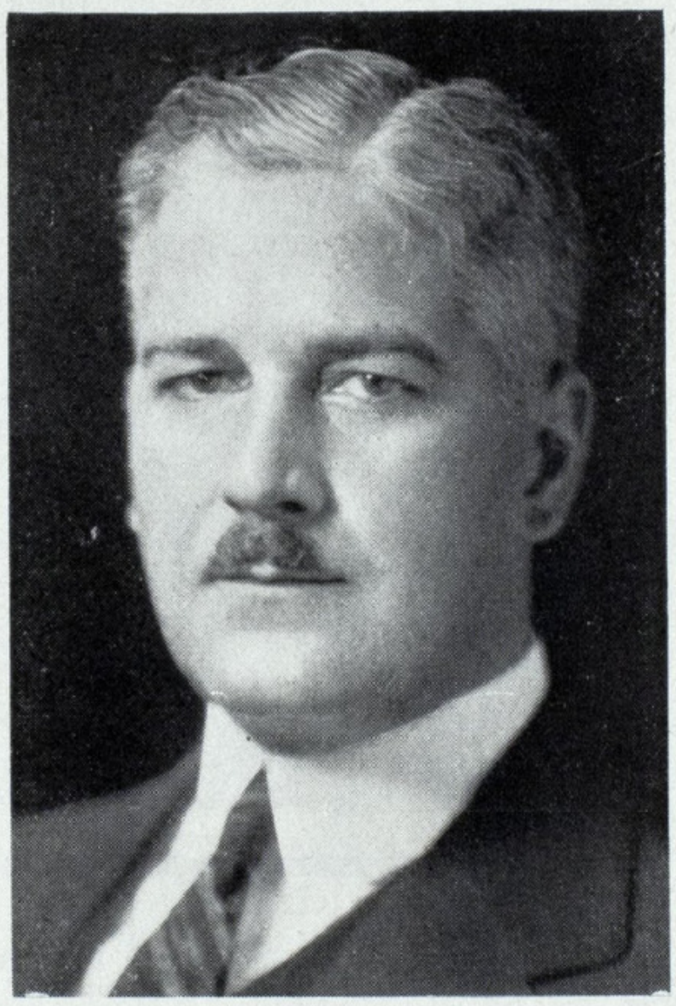
On Aug. 29 the CONTE DI SAVOIA arrived in New York from Naples, Genoa, Nice and Gibraltar with 1808 passengers, the record passenger list for any westbound liner up to that time this year. The CONTE DI SAVOIA holds the eastbound passenger record since 1932 when she sailed from New York with 1950 passengers on board.

Arriving in New York on Sept. 13 from Naples, Genoa, Nice and Gibraltar, the REX exceeded the recent westbound record passenger list, made by the CONTE DI SAVOIA on Aug. 29, with her own record for the year of 1863. She sailed from New York on Sept. 15 with 850 passengers for Gibraltar, Naples, Nice and Genoa.

C. M. Armstrong Dies

Capt. Charles M. Armstrong, general passenger traffic manager of the Furness-Bermuda line, New York, died at the New Rochelle hospital, New Rochelle, N. Y., on Sept. 9. He was 42 years of age, and his death was due to a cerebral hemorrhage.

Captain Armstrong backed by the progressive policy of the line he served had been remarkably successful in building up a large passenger trade between New York and Bermuda.



He was held in high regard by his colleagues and by the shipping men of the port.

He was born in St. John, N. B., and during the World war he served for 42 months as captain of the Eighty-seventh batallion, Canadian Grenadier Guards. He was awarded the military cross for conspicuous gallantry in action.

On leaving school he went to work for the Canadian Pacific in Montreal and later with the Allan line in that city, continuing with that company until 1915. After the war Captain Armstrong re-entered the shipping business with the Canadian Pacific in New York and later joined the Furness, Withy Co., where from the first he devoted his attention to the passenger traffic of the Furness-Bermuda line.

Lifeboat Race Is Won by Italian Crew

The eighth international lifeboat race, held in the Hudson river on Labor day, was won by the crew of the Italian liner, CONTE DI SAVOIA.

The two-mile course, starting from a point off Spuyten Duyvil and ending near the George Washington bridge, was completed by the winning crew in 16 minutes and 20 seconds. The crew of the W. C. TEAGLE of the Standard Shipping Co., winners of the race last year, came in second in 16 miuutes and 30 seconds; with the crew of the VERAGUA of the United Fruit Co., close behind them, completing the course in 16 minutes and 32 seconds.

The CONTE DI SAVOIA was given possession of the R. L. Hague international lifeboat racing trophy for one year. This cup becomes the permanent possession of the crew winning the race three times. Silver cups were awarded the boats finishing first, second and third, while gold medals were presented members of the CONTE DI SAVOIA crew. The TEAGLE seamen received silver medals and the VERAGUA oarsmen, bronze medals.

There were nine entries in the race this year, as follows: CONTE DI SAVOIA of the Italian line, completing her course in 16 minutes, 20 seconds; the W. C. TEAGLE of the Standard Shipping Co., 16 minutes, 30 seconds; VERAGUA of the United Fruit Co., 16 minutes, 32 seconds; VON STEUBEN of the North German Lloyd, 16 minutes, 34 seconds; PRESIDENT HARDING of the United States lines, 16 minutes, 39 seconds; EXCALIBUR of the Export Co., 16 minutes, 42 seconds; QUEEN OF BERMUDA of Furness Withy & Co., 17 minutes, 17 seconds; NORA BAERSK of Isbrandtsen-Moller, 17 minutes, 57 seconds; and SCANPENN of the American-Scantic line, 19 minutes, 45 seconds.

Holiday Cruise Planned

Due to the number of inquiries regarding Christmas and New Year's holiday cruises, the International Mercantile Marine-Roosevelt Steamship Co. has scheduled a New Year's eve cruise to Bermuda on the United States liner MANHATTAN.

The MANHATTAN is to sail from New York on Dec. 28 and to arrive at Hamilton, Bermuda on the morning of Dec. 30. The passengers will have a full day and a half in Bermuda, which is an unusually long stay for a four-day cruise, as the MANHATTAN is scheduled to sail from Hamilton on the noon of Dec. 31. New Year's eve is to be celebrated on shipboard on the return voyage. The MANHATTAN is to dock in New York on the evening of Jan. 1.

The interest shown in these cruises indicates that they will be even more popular than last year, when the MANHATTAN was booked to capacity.

Personal Sketches of Marine Men

George A. Marr, Vice President, Secretary and Treasurer, Lake Carriers' Association

By Wm. M. Faber

HE has served the Lake Carriers' association continuously since its organization in 1904, during which time it has steadily gained in prestige.

THE welfare plan of the association has been developed and administrated under his active supervision. Its success is largely due to his efforts.

IN him the men sailing on the vessels of the Great Lakes, as well as the owners, recognize the qualities of sound judgment and fair dealing.

THE career of George A. Marr has been so closely connected with the Lake Carriers' association for the last thirty years that the successive steps in his advancement may be said to mark its steady growth through good times and bad. Now as its full time executive he holds the offices of vice president, secretary and treasurer.

Modest, mild mannered and humane with a deep understanding of the relations between employes and employers, he has earned and retained the esteem, not only of the vessel owners who make up the association's membership, but also of the thousands of men who make their living on these vessels. He was appointed secretary of the association in April, 1904, by William Livingstone, then and for many years thereafter its president. Throughout the years he has seen the association grow in numbers and influence until now the member ships number 400 of 2,197,026 gross tons.

He has been responsible for the development and administration of the association's successful welfare plan, now a model for shipping organizations the world over. To this plan, establishing the world's highest shipping wages and the best working conditions for sailors, is largely due the freedom enjoyed by association members from major labor troubles since 1909—a record to which any industry could point with pride.

Under the supervision of Mr. Marr, whose energy and perseverance supplied the active guiding force, many important features have been incorporated into the plan, after careful consideration by the association's executive committee and as conditions warranted, throughout the long period of its existence.

From keeping a record of the whereabouts of every sailor actively engaged on each ship, the plan has been expanded, since its inception in 1913, until it now includes a system of registration whereby for a nominal sum benefits are assured to the family of a registered sailor in case of his accidental death in the line of duty. Beginning in 1916, schools established to train young men as pilots and engineers have aided over 1000 to secure their licenses as officers.

By educational methods and through co-operation with banks the association has made it possible for the men on each ship to save their money. Serious injuries due to accidents have been practically eliminated by continuous, practical and effective efforts on the part of the association in building up among the men themselves a strict regard for all safety measures.

Halls in charge of commissioners are maintained by the association at each important lake port where officers may find men for their crews and men waiting a berth may assemble in comfortable surroundings.

While working for the welfare of the group, Mr. Marr has always been ready to help the individual. Every man coming to him for aid in securing employment or with a grievance has been courteously received, with the result that the men have come to feel that in him they have a real friend. His genuine humanity was well demonstrated in one instance when he offered a blood transfusion to an injured sailor.

Of Scotch ancestry, he was born in Detroit, 68 years ago. After completing grade school, he entered the employ of the Michigan Central railroad. He served as secretary to the general superinendent for 15 years. In 1904, after a short sojourn in Buffalo, he came to Cleveland to join the then newly incorporated Lake Carriers association as its secretary. He became treasurer, as well, in 1918 and in 1929 the board of directors, in recognition of his able and faithful service, elected him vice president in addition to the two offices he already held.

His two hobbies are traveling and reading. He has an extensive library of history, biography and travel.

Port of Gdynia

(*Continued from Page* 21)

concerns are following Bata's initiative.

The free zone is making Gdynia a point of transit and distribution not only for the Baltic and Scandinavian countries, but also for the countries of south and southeast central Europe, such as Rumania, Austria and even a part of southern Russia (the Ukraine)—countries already naturally gravitating toward the new port.

Another economic consideration which makes Gdynia one of the most advantageously situated of transit ports is the low port dues for transshipment and storage. Thanks to the low level of wages in the port and the low currency, these dues, which have an effect also on maritime freight rates are exceedingly favorable to transit trade.

Commerce of Gdynia

While international trade has been struggling under severe blows in the last five years, ship traffic at Gdynia has marched ahead in a phenomenal development. Only 24 ships, with a tonnage of 14,000 entered the port ten years ago. Last year, 8732 ships, with a tonnage of almost 7,000,000 used the port. In 1926, only 13 different countries were represented in the traffic, while last year 23 different flags waved in the Polish port.

Cotton, America's chief export, is preferred in many countries of Central Europe today chiefly through the rise of Gdynia. Not only is Poland buying an increasing amount of American cotton for her extensive textile industries but the port is attracting cotton for transshipment to Czechoslovakia, Austria, Rumania, Hungary and Baltic countries. Before the creation of the made-to-order port at Gdynia, the Polish textile industry used mostly Russian and Persian cotton, brought chiefly through Bremen and Hamburg. As Gdynia developed, warehouses, derricks, side derricks and other equipment were installed, with the result that last year a third of a million bales of cotton arrived at Gdynia, as against only 2000 bales in 1930. Of the cotton imported today, 85 per cent comes from America. The greatest factor in directing cotton through Gdynia was the placing of a preferential sea tariff on all cotton shipped to Poland by way of sea, rather than by railway from Germany. Polish textile concerns, moreover, are financing their own cotton imports instead of leaving the financing to foreign firms. At Gdynia, special attention is also being paid to cotton shipments to countries of Central Europe, and during last year more than 50,000 bales entered the port bound for other countries.

Today, Gdynia has become the fifth busiest port in Europe, as far as its export and import turnover is concerned, being beaten only by Rotterdam, Hamburg, Antwerp and Marseilles—all of whom have been in existence for centuries. Gdynia, infant of ports, has already passed the ancient ports of Stockholm, Danzig, Bremen, Copenhagen, Le Havre, Bordeaux and Trieste. As recently as 1924, the import and export business of Gdynia was little more than 10,000 tons. Last year, the imposing total of 6,105,866 tons was handled by Gdynia, an increase over 1932 of practically a million tons.

Increasing Variety of Trade

The variety of trade at Gdynia has likewise increased yearly. In 1926, imports directed through the port consisted of only two groups of commodities. There were five in 1927, nine in 1928, fifteen in 1929 and thirty-four in 1930. The same is true of exports. In 1928, there were six types of export goods; in 1930, there were thirty-four.

Among the leading products which pass through Gdynia are rice, chemicals, minerals, tobacco, shell for buttons, herring and similar commodities. Poland exports through the port a great deal of coal, sugar and wood as well as cement, zinc, eggs, butter and bacon. It imports cotton, machines, scrap iron, iron ore, chemicals, building materials, phosphates and various foodstuffs.

How significant Gdynia has proved to Polish trade is clearly shown by its seaborne trade. In 1922, only 7.4 per cent of all Polish imports and exports were directed through Polish ports, while during the first half of this year, 75 per cent of the trade used the sea route.

Thirty seven per cent, that is, more than one-third of Poland's foreign trade, passed through the port of Gdynia. Considering the general shrinkage of foreign trade, this represents the best evidence of the vitality of the port as well as of Poland's economic need of Gdynia.

Safety Congress to Meet at Cleveland

The twenty-third annual safety congress and exposition of the National Safety council will be held at Cleveland Oct. 1 to 5.

The marine section will convene on Oct. 2 at the Statler hotel and will be addressed by General Chairman Frank H. Cogan. The following papers are to be presented:

"The Economics of Accident Prevention in Handling Marine Cargo," by H. W. Heinrich; an address by J. H. Love, manager of saftety and welfare, Federal Shipbuilding & Dry Dock Co.; "Safety from the Seaman's Viewpoint," by David Berman; and "The Safety Activities which Reduce Accidents in Building Ships," by Stewart Lee Jr., safety engineer, New York Shipbuilding Co.

On Wednesday, Oct. 3, the following papers will be presented: "Visualizing Safety," by Henry J. Heidorn, personnel department, Standard Shipping Co.; "Combining Safety with Speed in Bulk Cargo Handling," by C. W. Turning; "Accident Abatement in Iron Ore Unloading on the Great Lakes," by J. D. Proctor; superintendent, Erie Dock Co., Cleveland. Data will then be presented on the 1934 safety contest and presentation of awards will be made.

Thursday morning, Oct. 4, the following papers are to be presented: "Oil Tankers—Safety Observations," by W. F. Jones, superintendent, marine department, Gulf Refining Co.; "Safety in Navigation," by Professor H. L. Seward; "Expert Witnesses in Marine Injury Cases," by Carl F. Vander Clute, admiralty attorney; and "Marine Problems—Prevention of Claims in Connection With Accident Prevention," by Capt. E. C. Holden Jr.

Plan New Shipyard

Gulf Industries Inc., Pensacola, Fla., it is reported has secured a grant from the city of Pensacola of 180 acres of waterfront property for a shipbuilding and shiprepair plant, with the stipulation that the company shall expend $2,500,000 this year for buildings and equipment, drydocks, etc.

Propeller Club Convention To Meet at Savannah

The eighth annual convention of the Propeller Club of the United States is to be held at Savannah, Ga., Nov. 1 to 3. A large and enthusiastic attendance is anticipated. It will undoubtedly be the most important gathering of shipping men and allied representatives held in recent years.

One of the features of this convention will be a merchant marine conference to be presided over by J. C. Peacock, director of the shipping board bureau. It is understood that the department of commerce will issue invitations to a list of nearly 2000 shipping men, exporters, importers, manufacturers, etc., to attend the conference on Nov. 2. Secretary Daniel C. Roper of the department of commerce has assured the president of the Propeller club full co-operation of the department. For this purpose he has appointed as his representatives, J. C. Peacock, and General D. N. Hoover, assistant director of the bureau of navigation and steamboat inspection.

Merchant Ships

(*Continued from Page* 15)

In preventing the utter disappearance of the private shipbuilding industry of this country the merchant marine renders the navy and the nation an inestimable service. American shipbuilders have repeatedly declared that the higher cost of ships in the United States, as compared with that abroad, is due to the higher wage scales here. At all events, they secure little or no foreign business. Naval construction is sporadic, usually insufficient in volume to keep them busy, and always uncertain due to political exigencies. They must therefore depend for a livelihood almost entirely upon the construction of such American-flag tonnage as has to be built in American yards to comply with the law.

For the private shipbuilding industry of this country to disappear would be a serious breach in our whole scheme of national defense. In any grave emergency involving our maximum naval effort, all our navy yards—the only public plants capable of building seagoing ships—would probably be fully engaged upon the repair and overhaul of naval vessels and auxiliaries. Practically all additions to the fleet, as well as the replacement of all shipping losses, would fall to the private shipyards. If these were inadequate disaster would certainly impend.

Keeping Shipyards Busy

In the ordinary course of events, normal replacement of obsolete merchant marine tonnage should suffice to keep a fairly robust shipbuilding industry going in the United States entirely aside from naval contracts. There were, on a recent date, even in the current depressed state of shipping, 1197 vessels, aggregating 6,753,944 gross tons in operation under the United States flag. Of these, 429 vessels, aggregating 2,712,182 gross tons, were in foreign trade, where vessels built abroad may fly the United States flag; but the rest, 768 ships, aggregating 4,041,762 gross tons, were in the restricted trade where only American built ships can operate.

Assuming an average life of 20 years for these ships annual replacements for the 4,000,000 gross tons in coastwise trade alone would give American shipyards 200,000 gross tons a year to build. At an average price of $200 per gross ton this would mean $40,000,000 worth of business annually. Half the normal replacements for the "treaty" navy—the other half being built at the navy yards, in accordance with the recent order of the congress—would send the private builders $35,000,000 more business a year. These two items combined would suffice to keep eight or ten capable shipyards constantly employed. Until the frantic scenes of 1917-1919 shall have disappeared from our memories, the existence of such an active shipbuilding industry will be recognized as a truly valuable national asset.

As a Source of Personnel

Besides its ability to furnish vessels to supplement the navy, and its value in helping to sustain the shipbuilding industry, the merchant marine affords the navy a ready source from which to obtain personnel already experienced at sea. During the World war 21,000 line officers (less than one-third of whom held permanent commissions) and upwards of 500,000 men were on active duty in the navy at one time, whereas there are now but 6132 officers available for deck, engine room, and aeronautical duties, and only about 80,000 men. The difference between these figures indicates how great an expansion of naval personnel might have to take place on the outbreak of war.

Congress in 1927 recognized the potential value of merchant marine personnel in this connection by passing an act which established a naval reserve of three classes, one being designated "the merchant marine naval reserve," to be "composed of male citizens of the United States and of its insular possessions who follow or have followed the sea as a profession and who are employed, or who have been employed within three years, on public vessels of the United States or such other seagoing vessels documented under the laws of the United States as may be approved by the secretary of the navy." Nearly 4000 officers are enrolled under this law—a very considerable asset—despite the fact that the congress has never appropriated any money to provide for giving them actual experience, with pay, in naval vessels.

Carrying on Trade

One other function of the merchant marine deserves to be mentioned as an indirect but none-the-less valuable aid to national defense. That is, the function of carrying on our foreign trade during hostilities. When arms clash, seaborne traffic is the first to feel the feverish breath of war. Radios crackle. Ships scurry for port. Blockades are declared. The commerce of the whole world is suddenly twisted. Shipments pile up on wharves. Insurance rates shoot upwards.

It is then that our own merchant marine becomes of the most intense value to us. Whether we are neutral or belligerent, our foreign, coastal, and intercoastal seaborne business must go on, else our whole business structure totters. Materials essential to our industry and our defense must be fetched from abroad. Credits for essential purchases abroad, either for defense or for home consumption, or for the purpose of exerting economic pressure on our adversaries must be established by the delivery abroad of our own products. Nothing but our own merchant marine can be relied upon to do these things in our interest under such circumstance. Even the navy is powerless to do them.

Viewing the picture as a whole, it is not difficult to discern how vital to the country's welfare both the navy and the merchant marine are. What may be required of them sooner or later, no one can truly foretell. But whatever befalls, each must be adequate, or both will fail.

Adequacy—What it Means

What constitutes adequacy for each of them? The congress and the chief executive, in the exercise of their constitutional functions, have already answered that question. In the Vinson-Trammell act they have established the composition of the United States navy with respect to the categories of vessels limited by treaties, "at the limits prescribed by the treaties," and aircraft in number commensurate therewith—that is, a navy second to none. In the merchant marine acts of 1920 and 1928 they have twice declared it to be the policy of the United States "to do whatever may be necessary to develop and maintain a merchant marine sufficient to carry the greater portion of its commerce and serve as a naval auxiliary in time of war." If our navy and our merchant marine are both up to those standards there is no question of their adequacy.

Are they adequate now? The navy, even when all the ships now under construction are completed, will still lack 78 ships allowed by the treaties, to say nothing of several hundred aircraft, or of some 2000 officers and 20,000 men "commensurate with a treaty navy." Our merchant marine, in competition with the rest of the world, has never been able to secure for itself the business of carrying more than 34 per cent of our foreign trade.

Shall they be adequate? That is for the people of the United States to say, by their support, their patronage, and through their representatives in the congress, and in the White House.

But of this much we may rest assured. If the navy and the merchant marine are both adequate, this country will be forever free to fulfill its destiny uncoerced. If either is not adequate, we may be compelled to lay our course according to another's bidding.

Proper Pier Construction

(*Continued from Page* 31)

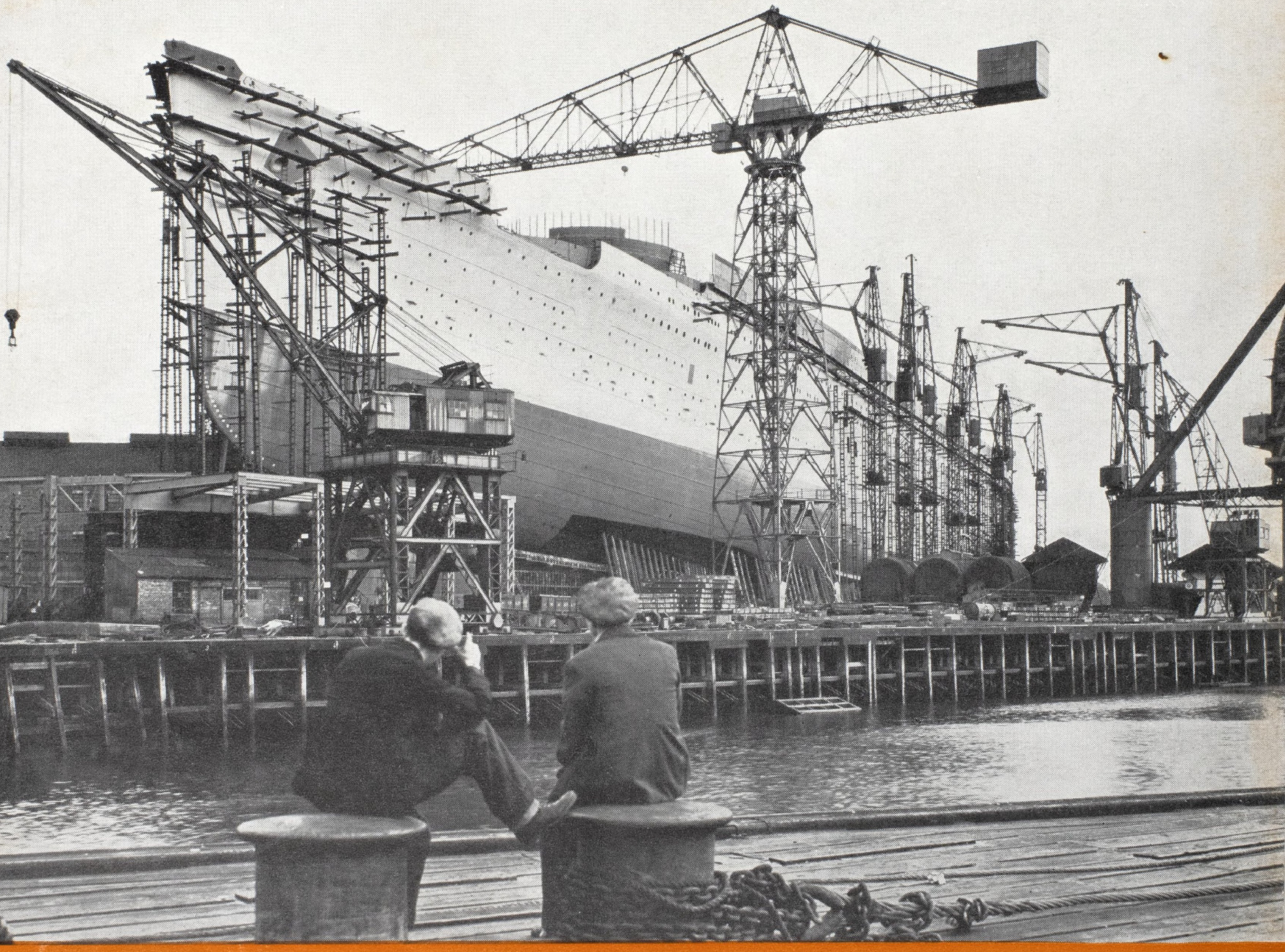
To improve the conditions for fighting fires under piers, architects should consider accessibility.

Reinforced concrete baffle walls should be suspended across the width of the pier at 100 foot intervals so as to reduce the fire area. These walls should extend from low water to the underside of the pier.

Marine Review

Reg. U. S. Pat. Off.

The National Publication Covering the Business of Transportation by Water



Cunard-White Star Superliner Queen Mary

October, 1934

A Loader, Tractor and Stacker

New ...BUT ALREADY ON THE JOB!

ANOTHER BIG ADVANCE—this Gas Tiering Fork Truck by Elwell-Parker. Its ability to handle a wide variety of jobs has been definitely proved. You can now select this Gas Powered Fork Truck, or those powered by electric or gas-electric, with assurance of equally dependable "Elwell-Parker" performance. All three types are built on the Interchangeable Parts System.

For years, Elwell-Parker has continually showed Industry how to save more and more money, by using Electric and Gas-Electric Tiering Fork Trucks to handle big loads on pallets; to move them rapidly; to stack high and take down again for loading out—*still on pallets.*

Now the new Gas Truck completes the line; provides even more speed and greater range of haulage service to some industries.

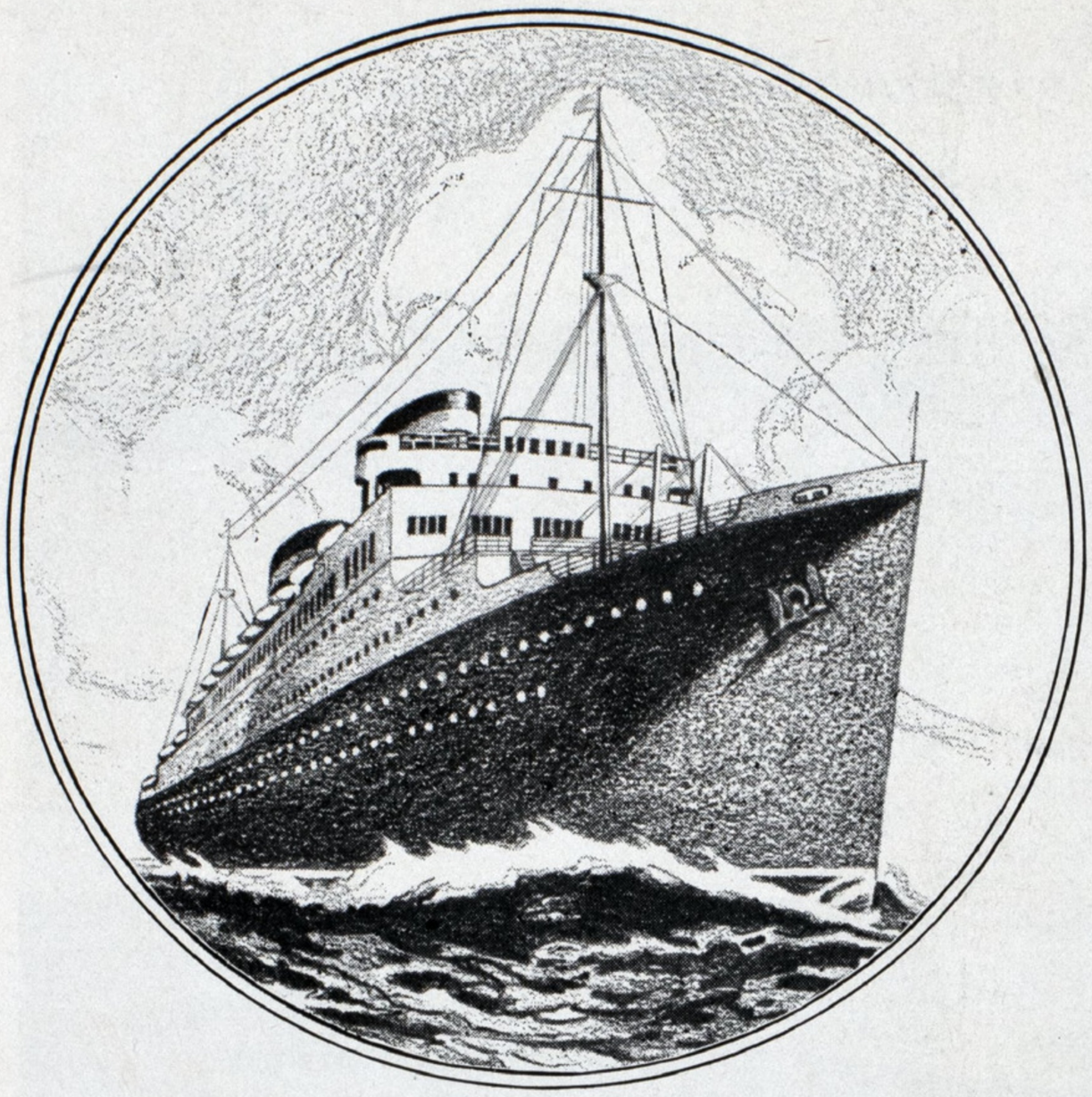
While you're thinking about savings in materials handling, better call in experienced Elwell-Parker Engineers to visit your plant, co-operate in studying conditions, make recommendations. No obligation. The Elwell-Parker Electric Company, 4213 St. Clair Avenue, Cleveland, Ohio.

New ELWELL·PARKER Gas tiering trucks

INDUSTRIAL POWER TRUCKS

Vol. 64, No. 10, October, 1934, issue of MARINE REVIEW, published monthly at Cleveland, O. Entered as second class matter at the post office, Cleveland, O., under act of March 3, 1879. Subscription price $3 a year in U. S.; Canada, $4; Great Britain and other foreign countries, £1. Single copies, 35c

There is no substitute for experience!



That the best work is done by those familiar with their work is conceded; similarly, equipment designed specifically for marine service will inevitably operate more efficiently and with greater economy than that merely adapted to this service in an effort to secure sales.

At no time during its existence has The Babcock & Wilcox Company offered the Marine Industry hastily conceived or converted equipment, or equipment containing inconsequential innovations, alleged to be revolutionary because of limited experience.

Instead, alert and progressive engineers of The Babcock & Wilcox Company, experienced in the problems of marine propulsion, have designed and developed efficient, practical, and thoroughly dependable steam-generating equipment that has met, and will continue to meet, every requirement of the Marine Industry.

The Babcock & Wilcox Company . . . 85 Liberty Street . . . New York

BABCOCK & WILCOX

M-39

"SHIELDED-ARC" WELDS

United States Navy's Aircraft Carrier "Ranger" of 13,800 Tons Displacement. Vessels of all types including freighters, tankers, barges, tugs and pleasure craft have been welded by the shielded arc with Lincoln equipment.

Where the U. S. S. Ranger and many other large naval and merchant vessels were built—the shipyards of the Newport News Shipbuilding and Dry Dock Co., Newport News, Va.

LINCOLN

NAVY PLANE CARRIER

"Fleetweld" Electrodes Exceed U. S. Navy's Exacting Specifications; Newport News Shipbuilding and Dry Dock Co. Use 333,000 Lbs. of "Fleetweld" to Build U. S. S. Ranger

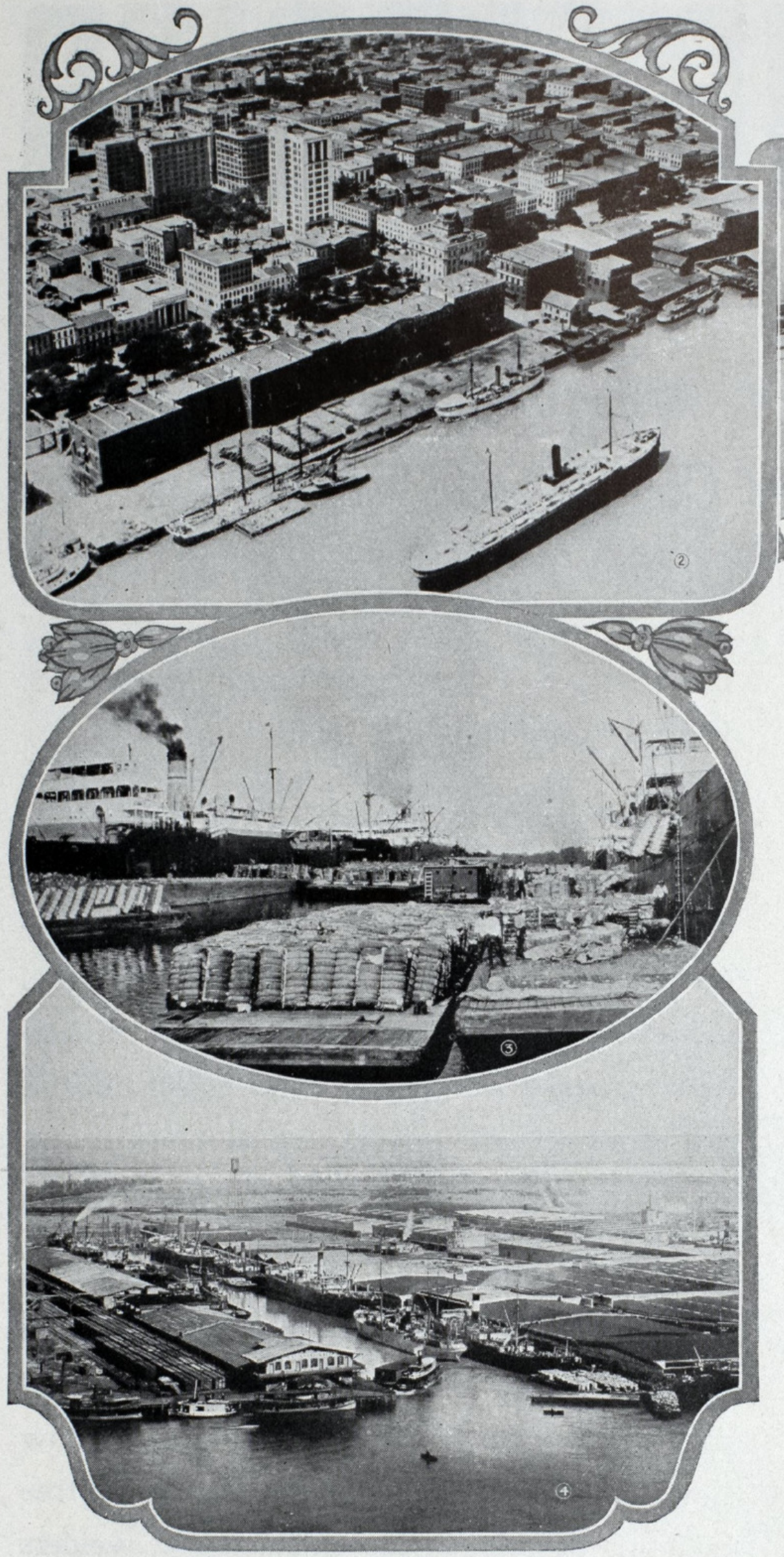
More than 225 miles of welds, produced by the shielded arc process with Lincoln *"Fleetweld"* electrodes are contained in the U. S. S. Ranger. By using Lincoln *"Fleetweld"* electrodes, the Newport News Shipbuilding and Dry Dock Co. were able to more than satisfy the U. S. Navy's rigorous requirements.

Welds produced by Lincoln *"Fleetweld"* electrodes and *"Shield-Arc"* welders have tensile strength of 65,000 to 75,000 lbs. per sq. in.—ductility of 20% to 30% elongation in two inches—greater resistance to impact, fatigue and corrosion than mild rolled steel. Welds with these characteristics can be made in *any* position: flat, horizontal, vertical and overhead.

You pay no more for those higher quality welds . . . in fact, they actually cost less than ordinary welds because with Lincoln equipment you weld much faster. Find out now how much Lincoln can save you. Ask for free bulletins describing the shielded arc, welders and electrodes. The Lincoln Electric Company, Cleveland, Ohio. Largest Manufacturers of Arc Welding Equipment in the World.

W-78

SHIELD-ARC WELDERS ELECTRODES AND SUPPLIES



On to SAVANNAH!

SAVANNAH, premier South Atlantic port, extends a hearty welcome to the American Marine Industry, on the occasion of the Eighth Annual Convention of the Propeller Club of the United States.

From the Mayor of the city down to its most humble citizen, Savannahians are looking forward to the event with pleasure and interest. In addition to the Convention itself, which will be a most important gathering to American marine interests, special features have been arranged for the entertainment and edification of Propeller Club members and guests.

Plan now to enjoy Savannah's warm climate and real southern hospitality on

Thursday, Friday and Saturday

NOVEMBER 1, 2, 3 -1934

FRIDAY, November 2d, has been designated as American Merchant Marine Conference Day. With the active cooperation and participation of the United States Shipping Board Bureau of the Department of Commerce, a most interesting program will be presented with J. C. Peacock, Director, U. S. Shipping Board Bureau, presiding. Outstanding speakers will deliver addresses of the greatest importance to the American Marine Industry. This, the first gathering of its kind since January, 1933, is of particular significance at this time. The American Merchant Marine cannot stand still; it cannot retreat; it must go forward!

EIGHTH ANNUAL CONVENTION

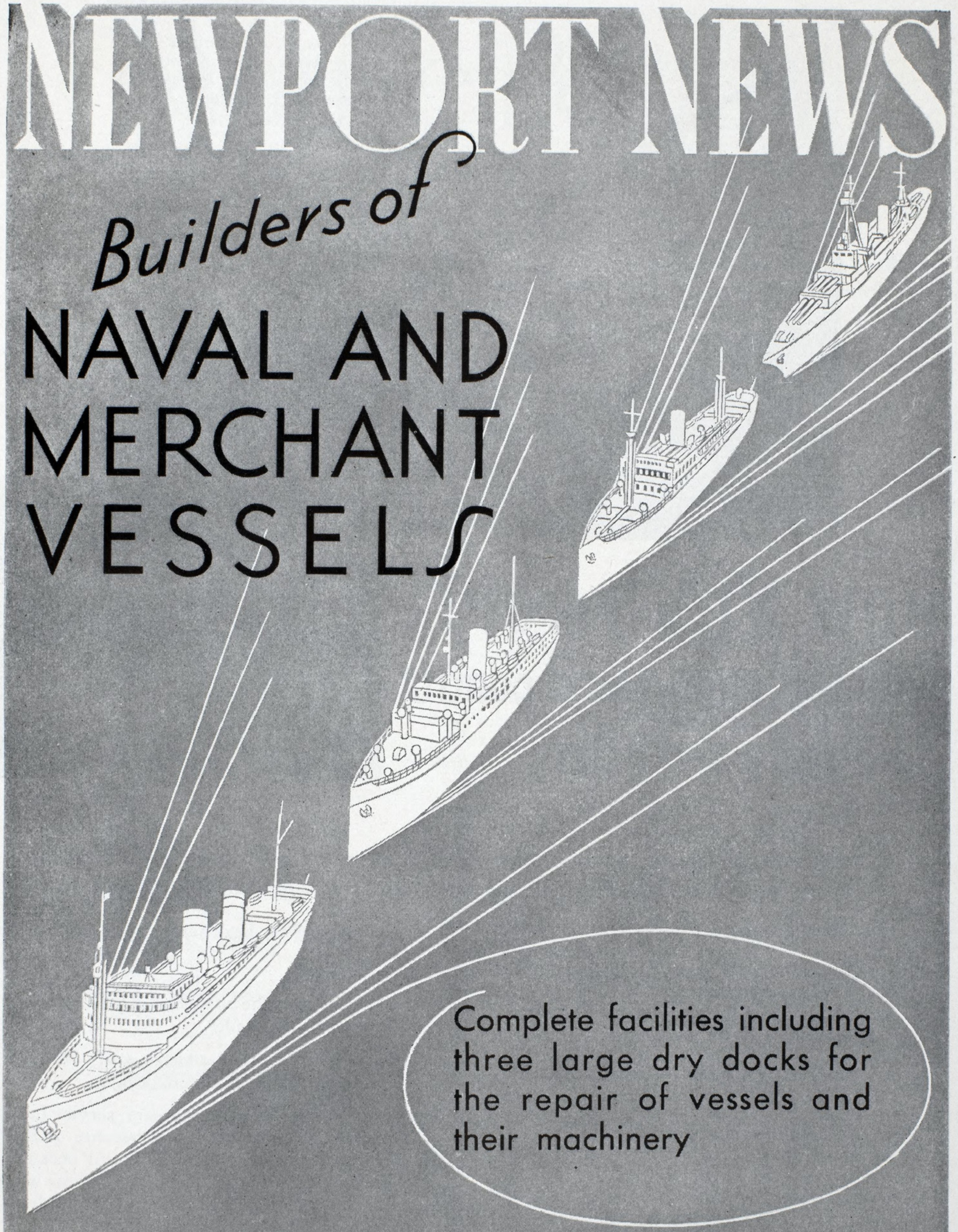
of the PROPELLER CLUB *of the* UNITED STATES

ALBANY — ALEXANDRIA, EGYPT — BALTIMORE — BOSTON — BUFFALO — CHARLESTON — CHICAGO — CINCINNATI — CLEVELAND — DETROIT — DULUTH-SUPERIOR — GALVESTON — GENOA, ITALY — GEORGETOWN UNIVERSITY — HAMBURG, GERMANY — HAMPTON ROADS — JACKSONVILLE — MIAMI — MILWAUKEE — MOBILE — MUSKEGON — NEW HAVEN — NEW ORLEANS — NEW YORK — PENSACOLA — PHILADELPHIA — PITTSBURGH — PORT-AU-PRINCE, HAITI — PROVIDENCE — SAVANNAH — SEATTLE — TAMPA — TOLEDO — U. OF WASHINGTON — WASHINGTON, D. C.

NEWPORT NEWS

Builders of

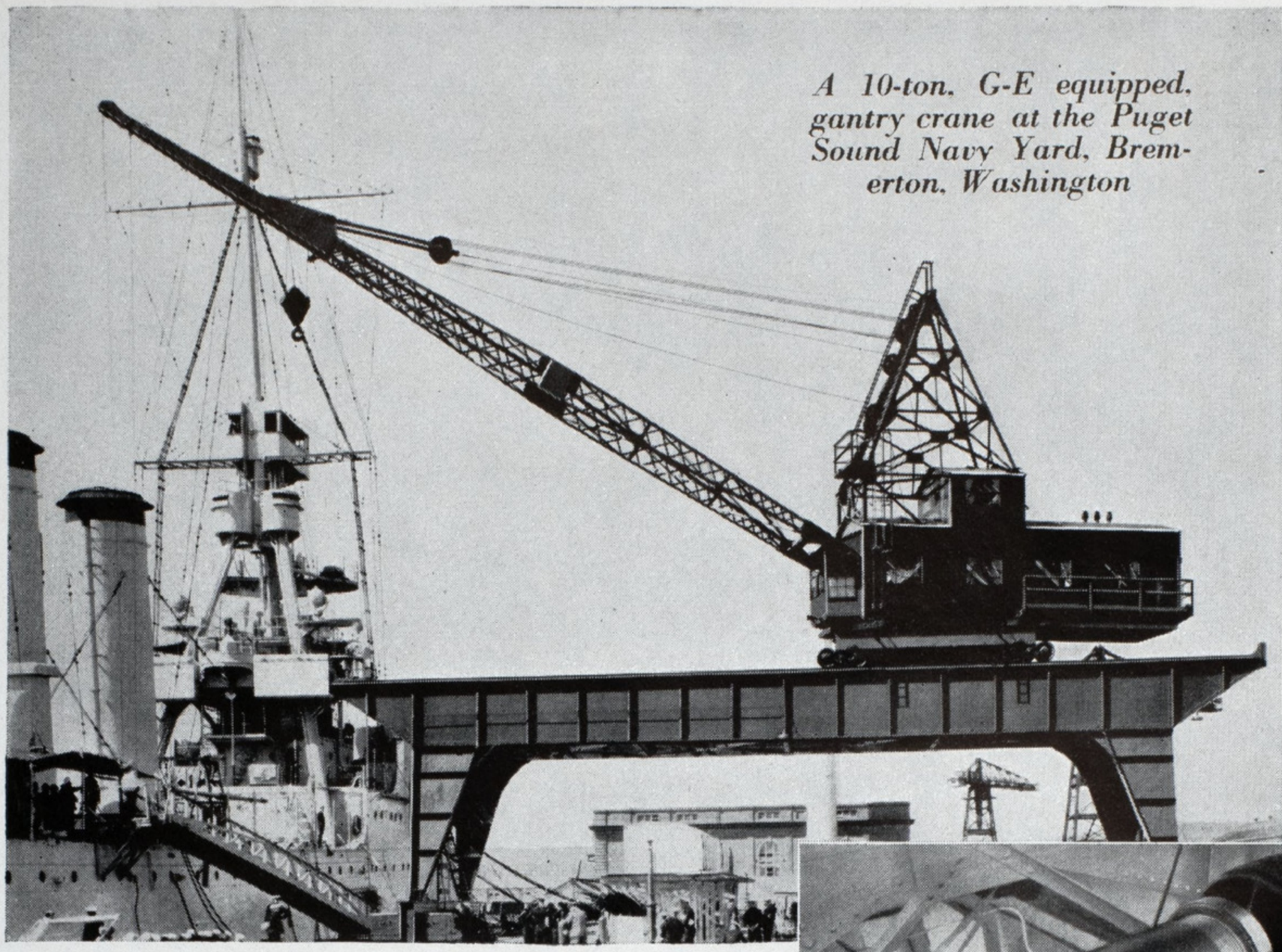
NAVAL AND MERCHANT VESSELS



Complete facilities including three large dry docks for the repair of vessels and their machinery

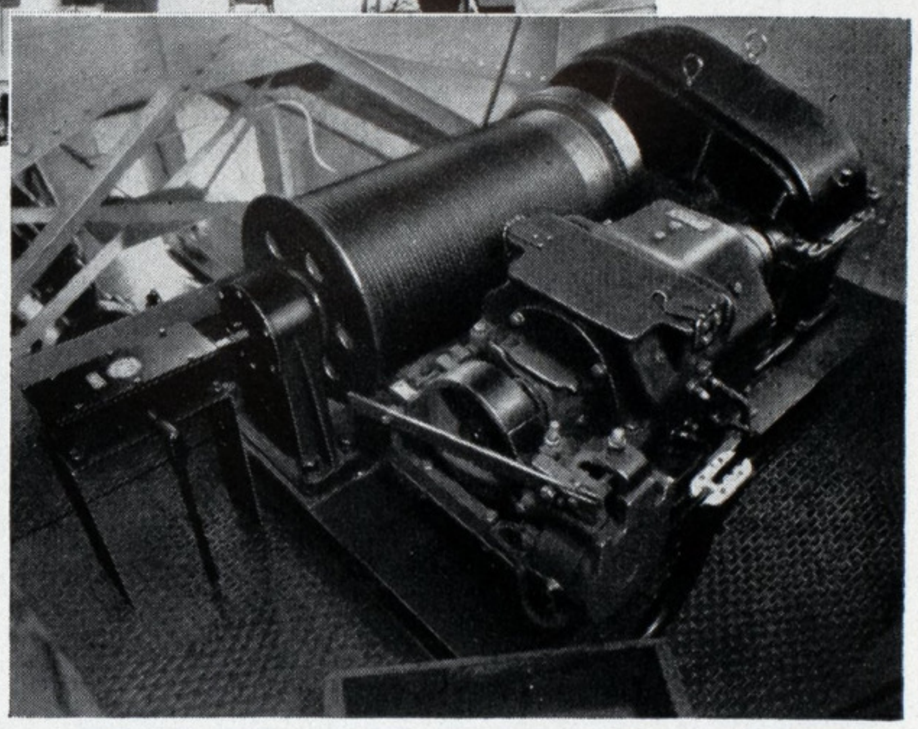
NEWPORT NEWS SHIPBUILDING *and* DRY DOCK COMPANY

Newport News, Va. - 90 Broad St., New York City



A 10-ton, G-E equipped, gantry crane at the Puget Sound Navy Yard, Bremerton, Washington

HOW YOU PROFIT with G-E motors and control on cranes and hoists



G-E motor, brake, and control applied to the hoist motion of the crane

YOU profit when you operate cranes and hoists with G-E motors and control because these motors and control save you money through the following features:

Low Maintenance Costs

1. They eliminate destructive jarring of the load and the crane, in starting or stopping, by even, automatically controlled acceleration and deceleration.

2. Their nonbreakable, noncorroding grids are designed especially for rough, outdoor service.

3. The sturdy, cam-operated control on all d-c. equipment has long life.

Dependable Service

You have the benefit of sturdy, weatherproof motors designed for heavy-duty service.

Time Saving

1. You can move the hoist *smoothly* from point to point on the controller.

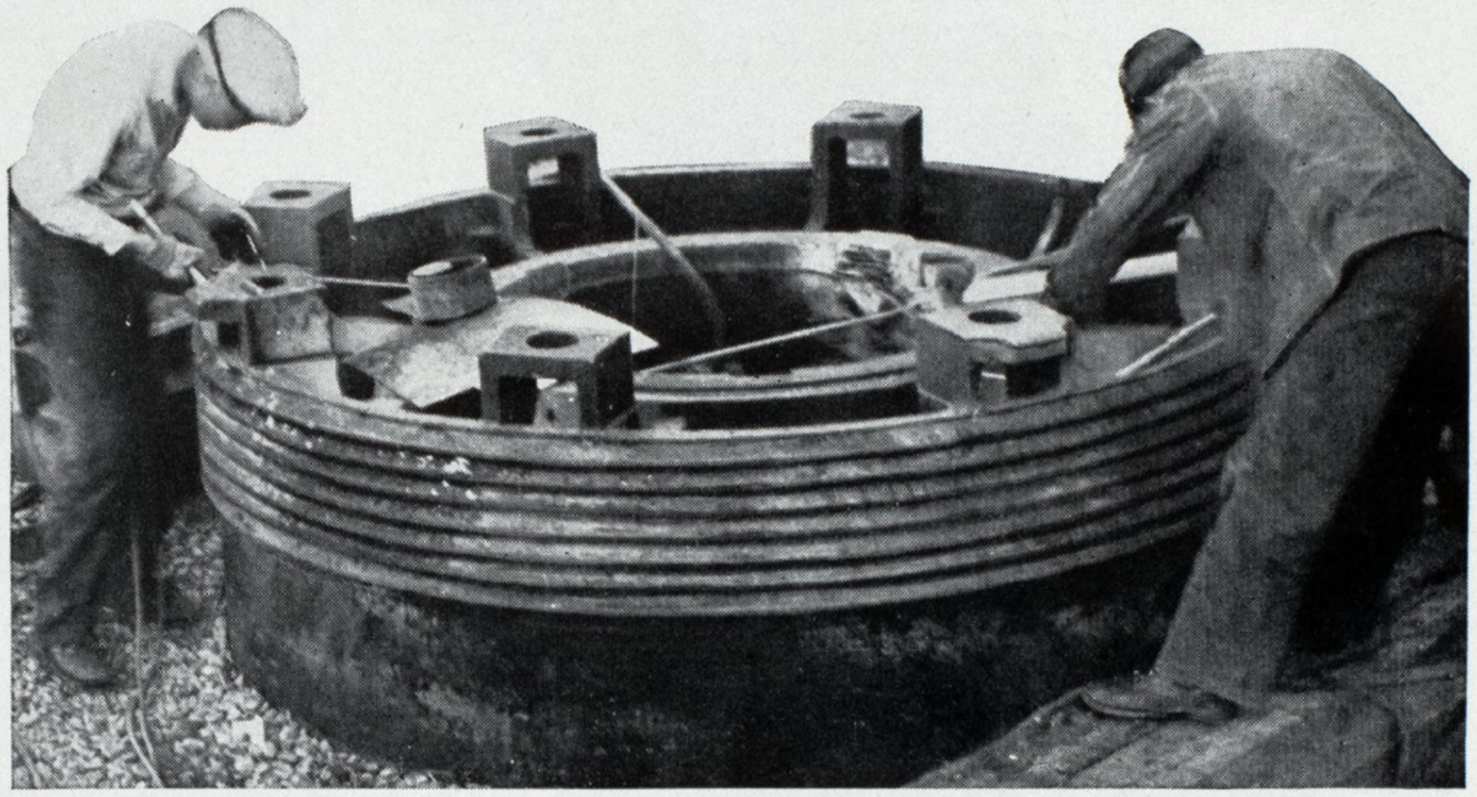
2. You can make adjustments *easily* because of the simple, practical circuit design.

Less money for upkeep and repairs; service that you can *rely* on; saving of time because of the smooth operation of the machine and because of the simplicity of adjustments—all these will *save you money* and thus add to your profits. General Electric, Schenectady, N. Y.

020 53

GENERAL ELECTRIC

Linde Process Service *helps save* $2,000 for User of Linde Oxygen



TWO GRAND—Bronze welding reclaimed this 8-ton crusher bowl . . . saved money and time out.

A LARGE rock crusher bowl in continuous operation had fractured and jammed in place. Would it be possible to save time and money by welding this 8-½ ft. diameter, 8-ton cast steel crusher bowl? Plant officials called on Linde Process Service for the answer.

They didn't have long to wait! Inspection showed it would have to be cut up for removal but—the Linde Service Operator saw another similar bowl on the scrap pile. He suggested that it would be cheaper to reclaim the scrapped bowl than to repair the broken one.

The suggestion was adopted. Linde cooperated closely throughout the job. The total cost of reclaiming the old crusher bowl and removing the destroyed one represented a saving of more than $2,000 over the cost of a new crusher bowl.

Just another instance of Linde Process Service *at work.*

Day by day this service helps all industry. It focuses on your particular problems the best thought drawn from thousands of practical experiences in many fields. The vast scope of this service is made possible only because Linde, as a Unit of Union Carbide and Carbon Corporation, has access to the extensive research and engineering staffs of a great organization. It is a thing that is not for sale—yet given gladly to all purchasers of Linde Oxygen to assure users of the fullest measure of satisfactory performance.

Ask the nearest Linde Sales Office for more details on how Linde Process can help you. They are located in Atlanta, Baltimore, Birmingham, Boston, Buffalo, Butte, Chicago, Cleveland, Dallas, Denver, Detroit, El Paso, Houston, Indianapolis, Kansas City, Los Angeles, Memphis, Milwaukee, Minneapolis, New Orleans, New York, Philadelphia, Phoenix, Pittsburgh, Portland, Ore., St. Louis, Salt Lake City, San Francisco, Seattle, Spokane and Tulsa. Everything for oxy-acetylene welding and cutting—including Linde Oxygen, Prest-O-Lite Acetylene, Union Carbide and Oxweld Apparatus and Supplies—is available from Linde through producing plants and warehouse stocks in all industrial centers.

PRODUCT OF A UNIT OF UCC UNION CARBIDE AND CARBON CORPORATION

The Linde Air Products Company

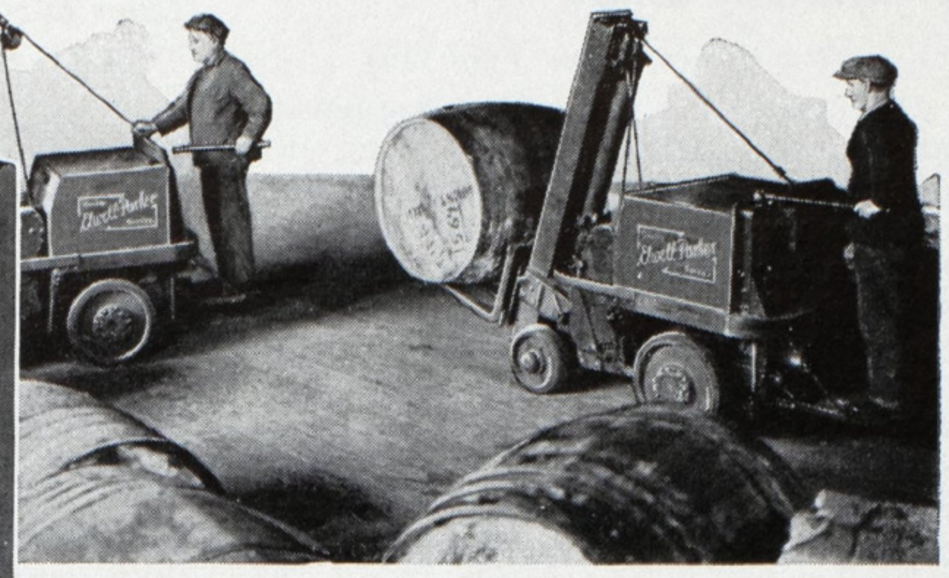
Unit of Union Carbide and Carbon Corporation

UCC

In Canada: Dominion Oxygen Co. of Canada, Ltd.

YOU CAN ORDER EVERYTHING FOR OXWELDING AND CUTTING FROM LINDE

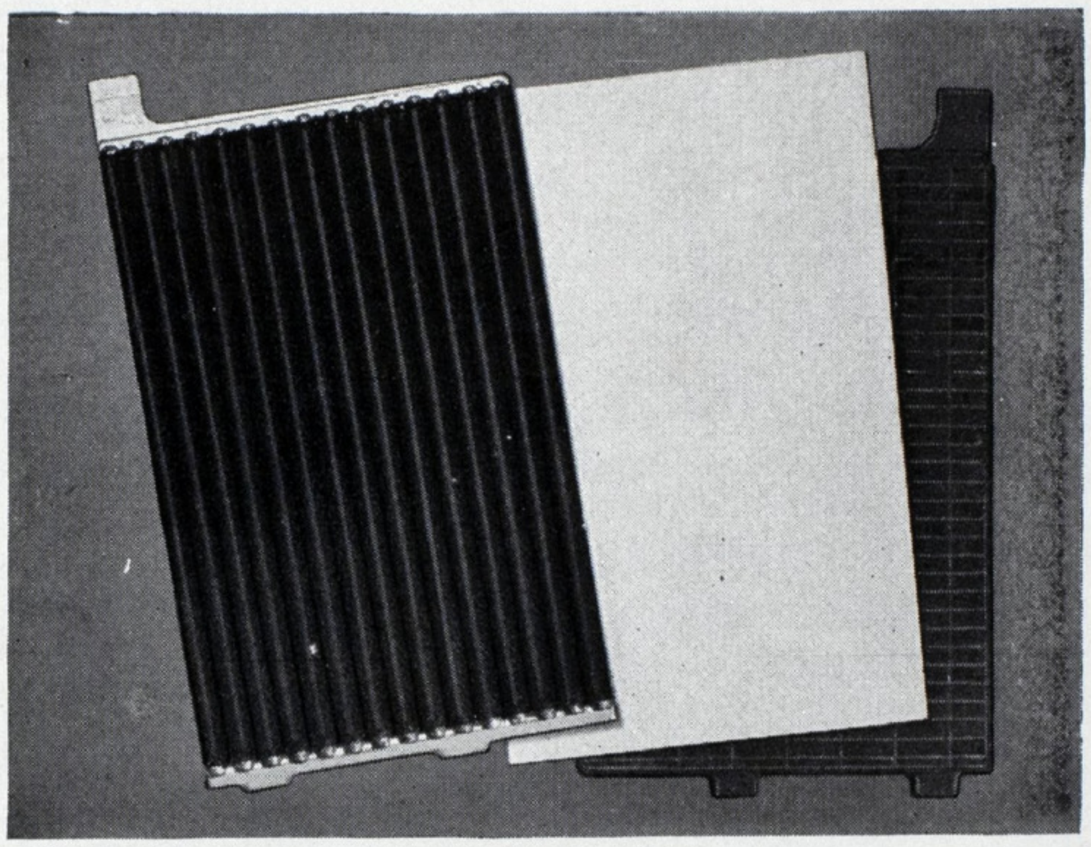
2-H



Left (Below): Exide-Ironclad Positive Plate, showing the slotted rubber tube construction.

Center: The new Exide Mipor Separator—the permanent storage battery plate insulator.

Right: Negative Plate.



A GOOD BATTERY MADE STILL BETTER!

Exide-Ironclad Batteries with the new Exide Mipor Separators offer outstanding advantages

Exide-Ironclad Batteries are known for their reserve power in hauling heavy loads and climbing steep grades—in keeping trucks on the job when there's work to be done. For more than twenty years, these batteries have made an enviable record of economy, with their long life, low cost of maintenance, and freedom from trouble.

Now Exide-Ironclads have been made still better, through the use of the new Exide Mipor Separator—at no increase in price.

Exide Mipor is vulcanized rubber, permeated by microscopic pores so numerous as to permit free diffusion of the electrolyte, and so minute as to form a barrier to the smallest particles of active material. Exide Mipor Separators easily withstand the most severe vibration, and will not deteriorate under the toughest operating conditions. They are unaffected by the electrolyte, and immune to the heat encountered in a battery. They function as permanent plate insulators, and will last the life of the battery.

In combination with the famous Exide-Ironclad positive plates that retain the active material in slotted rubber tubes, Exide Mipor Separators assure longer battery life, outstanding economy, reduced maintenance and freedom from service interruptions. Why not cut costs with Exide-Ironclads? Write for new folder giving full details on Exide Mipor, the permanent storage battery plate insulator.

THE ELECTRIC STORAGE BATTERY CO., Philadelphia

The World's Largest Manufacturers of Storage Batteries for Every Purpose

Exide Batteries of Canada, Limited, Toronto

NRA U.S. CODE

Exide
IRONCLAD BATTERIES

WITH EXIDE MIPOR SEPARATORS

"MIPOR," Reg. U. S. Pat. Off.

—in 1930:	You ought to have your tonsils removed.	All right, doctor, as soon as I'm free at the office.
—in 1931:	You ought to have your tonsils removed.	Sorry, doctor, but I can't afford it this year.
—in 1932:	You ought to have your tonsils removed.	I know, doctor, but I just don't have the money.
—in 1933:	You ought to have your tonsils removed.	Next year, doctor, I'll be out of the red by then.
—in 1934:	The poison is all through his system. He'll be in bed three months.	

MORAL: You can't put it off forever.

THE PUSEY AND JONES CORPORATION

Wilmington, Delaware — *Shipbuilders Since 1848*

We specialize in

BOOKS

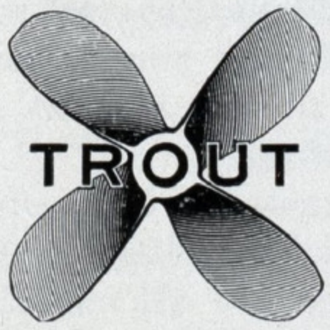
on Marine Subjects
and are prepared to furnish at
publishers' price any technical book in print

THE PENTON PUBLISHING CO.
Book Dept. Penton Bldg.
Cleveland, Ohio
431-M

John J. Boland — Adam E. Cornelius

BOLAND & CORNELIUS

VESSEL OWNERS AND BROKERS
Marine Insurance Agents
Marine Trust Building BUFFALO, N. Y.



E. H. READING
PROPELLER WHEELS
Machinery Repairs
226 Ohio St.
BUFFALO, N. Y.
'Phone Washington 5361

TWO GREAT FLEETS

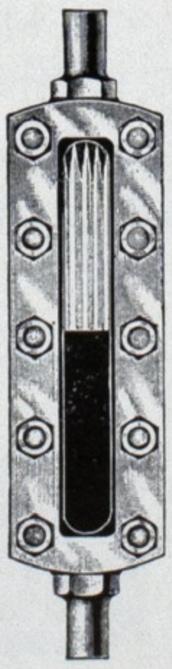
now offer an unexcelled Freight and Passenger Service to Europe via Bremen or Hamburg.

Fast Freight Services To Bremen and Hamburg, also via Antwerp from outports . . . including all shipping lanes from Montreal to Puerto Mexico and from all North Pacific ports. Special low rates in transshipments.

Passenger Services New York to Cherbourg, Southampton, Bremen and Hamburg. New York to Galway, Cobh, Cherbourg, Bremen or Hamburg. North Pacific Ports to Antwerp, Bremen and Hamburg via Panama Canal.

Pleasure Cruises Around the World, to the West Indies, to the Northern Wonderlands and Russia, the Mediterranean, Around Africa.

HAMBURG-AMERICAN LINE
NORTH GERMAN LLOYD
57 Broadway, New York, N. Y. — or Local Agents



REFLEX WATER GAGES

Used on all types of boilers by all the Principal Navies of the world

"The Water Shows Black"

ADVANTAGES: Quick and reliable observation of the water level. Safe, sure and durable at high pressure. Not affected by cold air drafts. Most effective protection against injuries to boilers and workmen. Easily applied to all types of gage glass fittings.

When filled with WATER the Reflex Gage always appears BLACK. When empty it instantly shows WHITE. No mistake possible. This feature alone is worth many times the cost of the Reflex.

Send for catalog of Water Gage Apparatus

MANUFACTURED BY THE
JERGUSON
GAGE & VALVE CO.
WINTER HILL, SOMERVILLE, MASS.

Mayari PIG IRON

for heat-resisting Castings

BY THE USE of a small percentage of Mayari Pig Iron in the cupola mixture, grate-bars and other furnace parts can be given much longer life at a trifling increase in cost. Mayari is a natural nickel-chromium pig iron and offers a simple, economical means of introducing those elements to make heat-resisting alloy-iron castings.

Mayari is also an effective agent for improving castings for machinery parts. Machinability, soundness, strength and wear-resistance are all substantially improved by a small Mayari addition. Engine and pump cylinders, piston rings and similar parts can be cast with assurance of freedom from blowholes, can be machined at lower cost, and will last longer, if Mayari is used.

Let one of our foundry specialists discuss the application of Mayari to your uses. A 'phone call or letter to the nearest Bethlehem district office will bring him.

BETHLEHEM STEEL COMPANY
GENERAL OFFICES: BETHLEHEM, PA.

District Offices: Atlanta, Baltimore, Boston, Bridgeport, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Detroit, Houston, Indianapolis, Milwaukee, New York, Philadelphia, Pittsburgh, St. Louis, St. Paul, Washington, Wilkes-Barre, York.
Pacific Coast Distributor: Pacific Coast Steel Corporation, San Francisco, Seattle, Los Angeles, Portland, Honolulu.
Export Distributor: Bethlehem Steel Export Corporation, New York.

BETHLEHEM STEEL

INDEX TO ADVERTISERS

American Shipbuilding Co.....Inside Back Cover

Babcock & Wilcox Co..... 3
Bethlehem Steel Co..... 42
Boland & Cornelius..... 41

Electric Storage Battery Co..... 39
Elwell-Parker Electric Co.....Inside Front Cover

General Electric Co..... 8

Hamburg-American Lines 41

Jerguson Gage & Valve Co..... 41

Lincoln Electric Co.....4, 5
Linde Air Products Co..... 10

Newport News Shipbuilding & Dry Dock Co..... 7

Oxweld Acetylene Co..... 10

Prest-O-Lite Co., Inc..... 10
Propeller Club of the United States..... 6
Pusey & Jones Corp..... 41

Reading, E. H..... 41

Sun Shipbuilding & Dry Dock Co.....Back Cover

Union Carbide & Carbon Corp..... 10
Union Carbide Sales Co..... 10

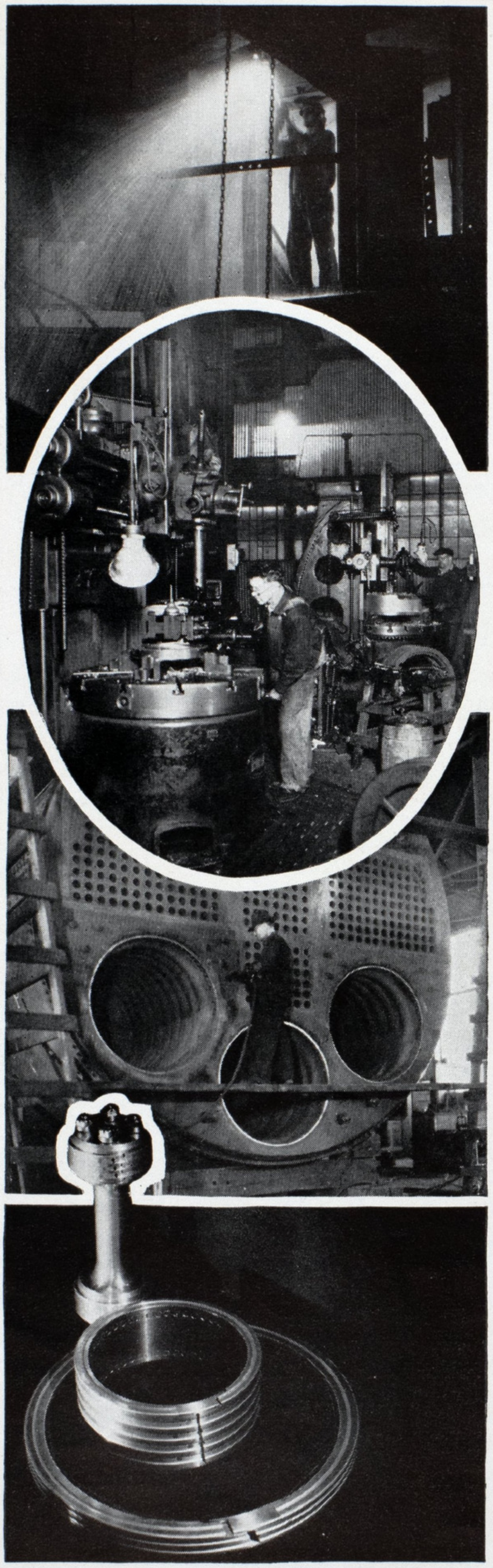
—o—

KNOWN OR UNKNOWN

Generally represents the difference between big and little business.

A known product sells with less sales effort because buyers have confidence in an advertised product. Non-advertised products are strangers to be doubted.

Don't handicap your business by failing to properly advertise your products.



They

CAN'T BE LISTED

—AT LEAST NOT IN A SINGLE ADVERTISEMENT

AMERICAN SHIP offers a variety of services — so complete — so inclusive that it would take more than a single advertisement to list them.

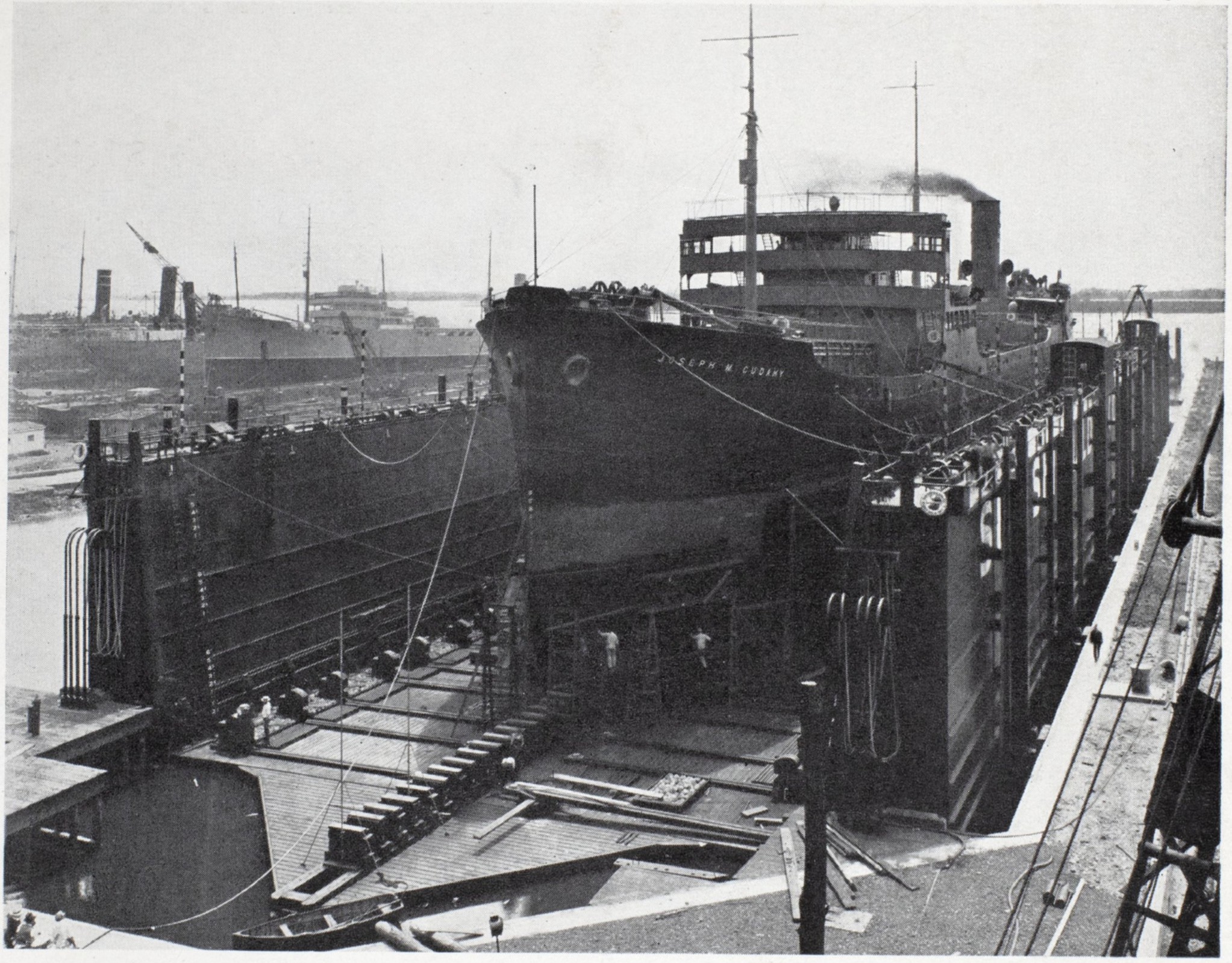
We build ships complete — hull — boilers — engines and equipment. That means that we have the facilities, the experience and the ability to carry out any repairs, any alterations, any improvements you may desire.

Five plants at strategically located Great Lakes ports — equipped with dry dock facilities — are ready to serve you .... dependably and speedily.

The AMERICAN SHIP BUILDING CO.

CLEVELAND	LORAIN	BUFFALO	SOUTH CHICAGO	SUPERIOR
American Ship Building Co.	*American Ship Building Co.*	*Buffalo Dry Dock Company*	*Chicago Ship Building Co.*	*Superior Shipbuilding Co.*

MARINE REPAIRS



Builders of the

SUN DOXFORD OPPOSED PISTON DIESEL OIL ENGINE

Two floating dry docks of 11,000 tons capacity each, every facility for hull and machinery repairs, including diesel or steam engine, together with a highly trained staff of engineers and workmen is your assurance of efficiency and dispatch when your marine repairs are made by the Sun Shipbuilding & Dry Dock Co.

SUN SHIPBUILDING & DRY DOCK CO.

CHESTER, PA.

New York Office: 25 Broadway